THE

UNITED SERVICE.

EDITED BY L. R. HAMERSLY.

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THE ENGINEER CORPS OF THE UNITED STATES NAVY.

"Their names were counted on the day of battle; but they were overlooked in the division of the spoil."

PART I.

THE ENGINEERS OF THE OLD NAVY.

THE first steam-vessel for war purposes in the United States navy, or in any other navy for that matter, was the "Demologos," designed by Mr. Robert Fulton and built under his supervision in New York in 1814, while the war with Great Britain was going on. Owing to difficulties in obtaining material and skilled labor, this vessel, or floating battery, was not completed in time to be used against the British fleet, then constantly hovering about the port of New York, an unfortunate circumstance that is to be regretted for more reasons than one. The subsequent performances of this peculiar craft under steam make it certain that with her powerful battery and independence of wind and tide she would have been entirely successful over the sailing-frigates she was built to assail, her advantage over them being not unlike that possessed by a savage, tireless wolf attacking a flock of sheep. Her earlier advent would have saved us the loss of the "President" frigate, and thus deprived the enemy of one of the very few causes for rejoicing over naval victories that the events of that war afforded, although it should be added this particular "victory" contained few

elements for consolation, as the British historians even, with one exception, have to admit that the "President" reduced her British equal, the "Endymion," to a wreck before a squadron of several ships came up and compelled the surrender of the American.

Of much more importance would have been the incalculable impulse given to steam as a factor in naval warfare that would have followed the success of the "Demologos" in battle, and which would have set forward the development of the times in this regard almost half a century. The duel between the rudely-fashioned ironclads "Monitor" and "Merrimac" completely changed the naval architecture of the world, but who can begin to tell of the absolute revolution, not only in naval architecture but in the methods of naval warfare, that would have resulted from the trial of Fulton's invention in actual war? Instead of being afterwards obliged to fight its way inch by inch and foot by foot, compelled to struggle against every obstacle and every objection which jealousy, conservatism, and ignorance could bar against its progress, slowly and painfully forcing an unwilling and qualified recognition from the very element that should have championed its cause, steam-power would have appeared in the arena fully armed and equipped from the brain of its master, and would have been hailed not only as an auxiliary but as an all-important arm in naval warfare, whose attendants would have been cheerfully and without question welcomed into the combatant class where they have always belonged.

During the summer of 1815 the "Demologos" made two or three trial trips at sea and demonstrated her possibilities as a war-vessel beyond the most sanguine expectations of her projectors. The machinery had been built and installed in the ship at Fulton's engine-works, and on the trial trips was attended by Fulton's men; as the vessel was never again under steam, her coming into the service did not bring any forerunner of the future in the form of an engineer. Neither did the next war-steamer that flew the stars and stripes. This was the steam-galliot "Sea-Gull," purchased in 1822 for use in Porter's mosquito fleet for the suppression of piracy in the West Indies, and being small (only one hundred tons), necessarily had a very small engineer's force. Of the number and rating of these men we have no record, and it is probable that they were special service men without any naval ratings; at any rate, they did not leave behind them any trace of their service in the form of established ratings, and they soon disappeared, as the "Sea-Gull" was laid up in 1825,—probably as a suspicious innovation. One can easily imagine that the engine-men of this galliot did not have a highly enjoyable cruise: their darksome deeds with fire and water in the depths of the hold making the ship advance against the winds, even as the "Flying Dutchman" was supposed to sail, must have savored of sorcery and the black arts and laid them open to unpleasant accusations of witchcraft and familiarity with

the powers of evil. Undoubtedly more than one gray head, abaft the mast as well as before it, wagged gravely in asserting that the presence on board of these fire-worshipers and their iron fetish boded no good.

In 1835, Mr. Dickerson, the Secretary of the Navy, plucked up courage to call the attention of the Board of Navy Commissioners to the fact that an act of Congress as far back as 1816 authorized the construction of steam-vessels, and, having thus far asserted himself, he went on to direct the board to take immediate measures for commencing and completing one steam-vessel, or battery; a task that seems to have occasioned the commodores who composed the board much vexation of spirit and mental travail, as is shown by a closely-printed public document of one hundred and forty-four pages containing their toilsome correspondence on the subject.

At that time there were about seven hundred steam-vessels in use on the waters of the United States, the most of them being on the rivers and lakes, although some coastwise steamship lines had been established: with few exceptions these vessels were not larger than a modern steam-tug, and their machinery was of the most crude design and workmanship, the chief object being to hammer together a boiler that would not leak too much to prevent the accumulation of some steam within it, and to hew out of heavy iron castings a cylinder with a roughly-fitted piston that could be forced to move back and forth under steam-pressure with reasonable regularity. There were at that time, of course, men of scientific attainments who were giving attention to the theory of the steam-engine, and who had made considerable progress towards the solution of those thermo-dynamic problems, the knowledge of which in our own day has made the steam-engine a comparatively economical machine.

To these experts, who were usually the managers or superintendents of the larger engine-building establishments then in existence, the Board of Navy Commissioners appealed for advice and help, but it does not appear from the records that any great amount of comfort was derived in this manner. One Wm. Kemble, who was the agent of the West Point Foundry Association, cheerfully supplied the board with long dissertations on the comparative merits of condensing and high-pressure engines and the theory of working steam expansively, giving copious opinions of Watt, Trevethick, Oliver Evans, and other authorities, all of which must have been highly entertaining reading for the commodores. One of these letters closes as follows: "I have given you our views candidly, but we are ready to execute any plan which the more extensive views and experience of the board may decide on." Whether this was the irony of an expert who appreciated the humor of the situation, or was simply the homage demanded by the well-known infallibility in all things of the Board of Navy Commissioners, is open to doubt, but as no dire catastrophe to Mr. Kemble

followed, we may safely conclude that the board accepted this insinuation of its engineering wisdom simply as a proper and customary due.

Construction work on the hull of the vessel went forward rapidly at the New York navy-yard, but the Navy Commissioners do not seem to have made corresponding progress in mastering the science of marine engineering, for we find them presently driven to the sore extremity of addressing the following letter to the Secretary of the Navy:

"NAVY COMMISSIONERS' OFFICE, December 30, 1835.

"SIR,—The Commissioners of the Navy have, in conformity with the terms of your letter of the 26th instant, caused an advertisement to be published asking for proposals for furnishing the steam-engines for the steam-vessel now building at New York. From their ignorance upon the subject of steam-engines they are in doubt whether the advertisement gives the necessary information to enable persons to make proper offers. They are satisfied that they are incompetent themselves, and have no person under their direction who could furnish them with the necessary information to form a contract for steam-engines that may secure the United States from imposition, disappointment, and loss, should the lowest offers happen to be made by persons whose general character and responsibility would not offer great security for their completing the engines in the best manner, according to the intentions and wishes of the board, in case the precise terms of the contract should leave them a legal opportunity of evading its spirit.

"The board beg leave, therefore, to request your authority for engaging some person who may be deemed competent to advise them upon this subject, and to superintend and inspect the engines during their progress, and until they shall be satisfactorily tested, and to designate the fund from which his compensation shall be paid.

"Respectfully, etc.,

"JOHN RODGERS."

Many are the tales in the navy of the plain bluntness and honesty of the officers of the old school, and they must have been honest and simple indeed when the greatest among them would make a confession of weakness as grave as the one above quoted. With the changing of the times the mental capacity of naval officers has likewise changed, and should the dazzling dream of a new Board of Navy Commissioners with imperial powers ever be materialized from the iridescent realms wherein it now lingers, we cannot in the wildest flight of fancy imagine the members of such a sanhedrim guilty of the fatal error of admitting the existence of anything in heaven or in earth not absolutely within the range of their omniscience.

February 19, 1836, Mr. Charles H. Haswell, of New York, was appointed by the Secretary of the Navy for a term of two months

"to make draughts" for the Navy Commissioners, and in July of that year he was appointed chief engineer for the "Fulton," as the steam-vessel then building was afterwards named; he thus becoming the first person to hold the position of engineer in the United States navy. Mr. Haswell was then an engineer of ability and established professional reputation, being earnestly engaged in the task, at that time a doubtful one, of proving the thorough reliability of steam as a marine motor independent of any aid from sails. To him has been granted a privilege that comes to few men in any calling on this earth, for it has been his fortune to witness the type of his profession—the steamship—grow from its awkward infancy to its present gigantic and perfected form, a development in which he has had a prominent part during all these decades, and which in the completeness of the changes that have been wrought far exceeds the magical transformations of a dream or the enchantments of a fairy-tale. In the great harbor where, as a young man, he saw the embryo steamer timidly and alone making its uncertain wake, an object so rare that curious crowds always flocked to watch it, he has been spared until now to see with the dim eye of his old age the waters daily lashed into foam by hundreds of propellers; to see the crude and clumsy "Fulton" transformed into the "Columbia" or the "New York," and the pioneer passenger steamers changed, as if by the magician's wand, into the "Umbria," the "Majestic," and the "Campania."

In the course of another year the "Fulton" was launched and her machinery installed under the supervision of Mr. Haswell, it having been constructed by the West Point Foundry Association. Captain M. C. Perry was ordered to command the "Fulton," and as she approached completion he began to disturb the peace of the Board of Navy Commissioners by frequently informing that august body that engineers and firemen would be necessary to operate the vessel; but nothing seems to have been done in the matter until Captain Perry reported that the trial of the vessel was being delayed and could not take place until men of this class were obtained: the board then prepared an edict on the subject and gave it the force of law by causing the Secretary to approve it, the order being as follows:

"Upon the subject of appointments of the engineers, etc., the board respectfully suggest the expediency of allowing, for the present, the commandant to nominate the assistant engineers, after collecting, as far as practicable, proofs or certificates of their character and qualifications, subject to the confirmation of the commander of the station, when time will allow of an immediate reference; in other cases, to be made by the commander of the vessel.

"That they receive a letter of appointment, revocable at any time by the commander of the station upon complaints of intemperance, incapacity, insubordination, negligence, or other misconduct, by the com-

mander of the vessel, if proved to the satisfaction of such commanding officer of the station.

"The commander of the vessel, of course, to have the power of suspending him from his duty, if he deems it necessary.

"The engineers to sign some proper instrument, which will legally render them liable to the laws for the government of the navy, but to be exempt from corporal punishment; which instrument is to be transmitted to the Secretary of the Navy, with the letter accepting their appointment.

"The firemen and coal-heavers to sign the shipping articles and be removable at the pleasure of the commander of the vessel, as authorized for the reduction and punishment of petty officers and seamen."

This order was dated October 31, 1837, and was carried into effect by the appointment of John Faron, Jr., and Nelson Burt as first assistant engineers on November 15, and of J. C. Hines and Hiram Sanford as second assistants on November 21. These appointments were made by Captain Perry himself, as is shown by the following extract from a report he made December 16 on the steam trial of the "Fulton:"

"The assistant engineers appointed by me promise to be highly industrious and useful men. I have been much pleased with their conduct, and, so far as I am yet capable of judging, consider them well acquainted with their duty; of one thing I am certain, that if the vessel is to be employed at all, sixteen instead of eight firemen will be indispensably necessary."

Captain Perry had foreseen the awkwardness of incorporating into the *personnel* of his ship a class of officials who would have to perform duties essentially military in their character but who would not be in the navy, holding mere temporary positions, exercising authority only by sufferance, and resting under no obligations beyond such as they individually assumed. The remedy he sought for this anomaly is curious, for instead of going to the very root of the matter and urging the immediate establishment of a military status for these new officials in a military organization, he conceived the notion that the outward show of militarism would be sufficient to conceal the utter absence of its existence in fact, and to this end he recommended that the new officials be clothed in a *uniform* that would identify them with the naval service and presumably exact that obedience and respect from their subordinates which their real status could not demand. This in defiance of certain well-established maxims regarding the inefficacy of peacocks' feathers, lions' skins, etc., to change the nature of their wearers when used as second-hand clothing. The recommendation of Captain Perry was approved by the Navy Department in the following terms:

"The adoption of a uniform such as you may approve, *if agreeable to those at whose expense it is to be provided*, meets with the sanction

of the Department, and it is also desirable, as mentioned in your letter, that none be appointed engineers but those of the very best standing."

The "Fulton" was a success as a steamer, but her construction was such as to greatly impair her efficiency as a war-vessel except for coast and harbor defense; nevertheless she was regarded as a formidable vessel on account of being a steamer, and served as an excellent object lesson in foreshadowing the rapid approach of the time when steam would be recognized as the most important factor in naval warfare. In 1840 the French navy possessed about forty small paddle-wheel steamers, while the English had nearly twice as many, some of the English steamers having been in action in 1839 in the attack upon St. Jean d'Acre, and had there demonstrated their immense tactical superiority over sailing-vessels. It is not my purpose here to give any account of the war-steamers built for our navy in 1840 and immediately thereafter, nor of the engineers who designed, built, and ran them, it being my intention some time when the signs are all propitious to write a full and complete history of the engineer corps from the time that the first engineer set his foot on the deck of an American man-of-war, in order that we of this day may know of the sterling good sense of the engineers who preceded us and of their achievements for the good of the service, often accomplished in the face of the most hostile opposition from the source whence they should have received their greatest encouragement.

For the purposes of this brief sketch it is sufficient to say that in 1842 there were five completed steam-vessels in the navy, two of which, the "Mississippi" and "Missouri," were large and powerful side-wheel frigates, and for these vessels there were twenty engineers who had been appointed in the manner before indicated in the case of the "Fulton." Their pay did not compare favorably with the wages of competent engineers in civil employment, and consequently was unsatisfactory to them; the irregular manner in which they were appointed, and their uncertain tenure of office, were also grievances, and early in the year with which we are now dealing an incident occurred which so provoked the engineers that they felt constrained to lay their troubles before Congress. This incident was the appointment as an engineer in the navy of a young man who made no pretense to knowledge of engineering, he being the *protégé* of a powerful politician and simply wanted a salaried position under the government, without bothering himself as to what the duties of that position might be. That the engineers then in the service resented this appointment is good proof that there already existed among them that pride in their calling and the *esprit de corps* that have for so long kept them united and made continuous progress possible in the midst of many discouragements.

Mr. Haswell, as the senior and most prominent of the engineers, took the matter in charge, and appealed to Congress for a redress of

grievances. Mr. Gilbert Thompson, a prominent politician and man about town in Washington in those days, took up Mr. Haswell's cause and gave him much assistance, although his motives were not entirely philanthropic, as we shall presently see. The result of this effort was an act of Congress regulating the appointment and pay of engineers in the navy, which act was approved August 31, 1842, and read in full as follows:

SECTION 1. *Be it enacted, etc.*, That the Secretary of the Navy shall appoint the requisite number of chief engineers and assistant engineers, not to exceed one chief engineer, two first assistant, two second assistant, and three third assistant engineers for each steam ship of war, for the naval service of the United States, who shall be paid, when in actual service, as follows:

To the chief engineer, fifteen hundred dollars per annum and one ration per day; to the first assistant engineer, nine hundred dollars per annum and one ration per day; to the second assistant engineer, seven hundred dollars per annum and one ration per day; to the third assistant engineer, five hundred dollars per annum and one ration per day. The chief engineer shall be entitled to mess in the wardroom of ships of war, and in all cases of prize-money he shall share as a lieutenant; the first assistant engineer shall share as a lieutenant of marines; the second assistant engineer shall share as a midshipman; the third assistant engineer shall share as the forward officers; but neither the chief nor the assistant engineers shall hold any other rank than as engineers.

SEC. 2. *And be it further enacted*, That the Secretary of the Navy shall be authorized to enlist and employ the requisite number of firemen, who shall receive, each, thirty dollars per month and one ration per day; and the requisite number of coal-heavers, who shall receive, each, eighteen dollars per month and one ration per day; and the said firemen and coal-heavers shall in all cases of prize-money share as seamen.

SEC. 3. *And be it further enacted*, That the said chief engineer and the assistant engineers when waiting orders shall be paid as follows: to the chief engineer, twelve hundred dollars per annum; to the first assistant engineer, seven hundred dollars per annum; to the second assistant engineer, five hundred dollars per annum; to the third assistant engineer, three hundred and fifty dollars per annum.

SEC. 4. *And be it further enacted*, That the Secretary of the Navy shall appoint a skillful and scientific engineer-in-chief, who shall receive for his services the sum of three thousand dollars per annum, and shall perform such duties as the Secretary of the Navy shall require of him touching that branch of the service.

SEC. 5. *And be it further enacted*, That the Secretary of the Navy shall be authorized to prescribe a uniform for the said chief engineers and assistant engineers, and to make all necessary rules and regulations for the proper arrangement and government of the corps of engineers and assistant engineers not inconsistent with the Constitution and laws of the United States. The said engineers and assistant engineers shall be in all respects subject to the laws, rules, and regulations of the naval service in like manner with other officers of the service.

SEC. 6. *And be it further enacted*, That the said chief engineers shall be appointed by commission, and the assistant engineers shall be appointed by warrant from the Secretary of the Navy, in such form as he may prescribe.

SEC. 7. *And be it further enacted*, That the Secretary of the Navy be and he is hereby authorized to establish, at such places as he may deem necessary, suitable dépôts of coal or other fuel for the supply of steam ships of war.

The day following the approval of this act Mr. Gilbert Thompson was appointed engineer-in-chief of the navy; this to the great amaze-

ment and disgust of Mr. Haswell, who had seen in Mr. Thompson only a benevolent and influential gentleman disposed to devote his time to the support of a cause simply because it was right. The following year the new engineer-in-chief achieved professional notoriety by causing the "Missouri's" smoke-pipe, seven feet in diameter, to be replaced by two pipes each three and one-half feet in diameter! The fact that this crazy scheme was approved by the Navy Commissioners, and the work actually done without exciting any doubt as to its propriety, furnishes an instructive lesson regarding the mechanical ideas that then prevailed in the navy. When steam was raised under the new arrangement the assembled officials marveled greatly that the furnace draft, instead of being improved, was practically destroyed, and a valuable precedent in the acquirement of scapegoats was at once established by putting the chief engineer of the "Missouri" under suspension because he "had not used sufficiently inflammable material in starting the fires." It is proper to remark in this connection, however, that this chief engineer had previously made himself disliked by being skeptical regarding the success of the smoke-pipe scheme.

This performance caused the engineering talent of its author to be mistrusted, and soon afterwards Mr. Haswell was installed in the Navy Department and authorized to act as the head of the engineering branch, although Mr. Thompson continued to hold the office to which he had been appointed. In October of the following year (1844) he vacated the place for another position, and Mr. Haswell was regularly appointed engineer-in-chief, thus becoming the first real engineer-in-chief of the navy, as he had been the first engineer to enter the naval service. Of Mr. Gilbert Thompson a contemporary has written: "Mr. Thompson was a lawyer, and knew absolutely nothing of engineering. He was a gentleman, a scholar, a diplomatist, and a son of a previous Secretary of the Navy; but his engineering was purely nominal, and confined to a very prompt and efficient drawing of his salary."

In 1845, at the solicitation of Mr. Haswell, a board, consisting of himself and two other chief engineers, was convened to examine and regrade all the assistant engineers then in the service,—a very sweeping commission, and one that resulted in many changes in grade and position, and in at least one dismissal. Radical and arbitrary as this proceeding was, it was, nevertheless, demanded by the results of the irregular manner in which the first engineers had been appointed and by the fact, as we have seen, that political influence had already become a factor in determining eligibility for appointment. The advantages of establishing engineering competency as a requisite for membership in the corps, and of starting fair with the engineering *personnel* graded according to merit, much more than offset any injustice to individuals that may have resulted in the rearrangement. Early in the same year Mr. Haswell had secured a modification of the law estab-

lishing the engineer corps, it appearing in the act approved March 3, 1845, as follows:

> SEC. 7. *And be it further enacted*, That in lieu of the mode heretofore provided by law, the engineer-in-chief and chief engineers of the navy shall be appointed by the President, by and with the advice and consent of the Senate.

This same act authorized for the first time the appointment of engineers in the revenue cutter service.

The engineer corps owes much to Mr. Haswell as its organizer and steady champion, and we of this day cannot but wonder at the remarkable progress he made considering the powerful opposition he had always to struggle against and his limited official power. He was master of the engineering knowledge of his day and a skillful designer of machinery; an excellent writer, proud of his profession and eager for it to deserve a high recognition in the naval service, it having been this desire that prompted him to inaugurate the system of examinations before referred to. His general education and accomplishments placed him far above the average naval officer of the period, and eventually operated to impel him to leave the service in disgust and under circumstances which, while not wholly creditable to himself, were much less so to others who had the power and the disposition to use official authority as a means of persecuting an intellectual superior.

Of the character of the early engineers much can be said both favorable and otherwise, differing with the individuals themselves. Some of them were men of superior attainments in addition to excellence in their chosen specialty, and not a few of these soon found that their position in the service, and the constantly growing hostility with which they were regarded by officers who should have extended encouragement and aid, were drawbacks, so undeserved that they made their stay in the navy brief, and greatly detracted from its usefulness by their going out of it. Others were good mechanics, competent to manage the simple machinery of that day, but making little pretence to social or scholastic culture, although the examinations inaugurated by Mr. Haswell, and always kept up after his time, required sufficient elementary education to raise the successful candidate far above the level of an ordinary engine-driver or journeyman machinist. As the standard of these examinations was being constantly raised, especially in those preliminary to promotion from one grade to another, they served as a keen incentive to study and self-improvement, while the almost immediate inception of a spirit of pride in the corps made its members quick to recognize their own shortcomings and to strive to overcome them.

Deficient as we know some of the first naval engineers to have been in polite accomplishments, we must remember that they lived in a rude time and had gone into a rude service where social niceties were not paramount. If the engineer's accomplishments ended with a

complete and masterful knowledge of his specialty, the same may be said of the great majority of the line officers of the same day. This was before the establishment of the Naval Academy, when the sea profession had to be acquired by hard knocks and practical application to its laborious details: the naval aspirant had no rosy road to rank and dignity, and was quickly found unfit for the service if he did not take pleasure in soiling his hands and broadening his finger-tips by constant familiarity with the tar-bucket and the marlinspike. Not a few of the most illustrious names then on the navy register were of men who had worked their way from the forecastle to the quarter-deck, while the boast of all the older officers was that they were thorough sailors, first, last, and all the time, well satisfied to leave general knowledge and social graces to the chaplains and professors; and this was also the ambition of the youngsters, who saw in their huge-handed and heavy-voiced seniors the ideal type for imitation. The grog-tub, the cat-o'-nine-tails, and the rope's end had such influence upon the character of the men that gentility was quite out of place in the officers who commanded them, if not well-nigh impossible after prolonged existence amid the scenes daily enacted on the decks of a war-vessel. The typical officer had little respect for the conventionalities of polite society, and, while regarding himself as a gentleman always, saw no breach of good form in wantonly insulting a foreign officer at the dinner-table of a mutual friend, and in trying to kill him afterwards, feeling sure all the time that his exploit would be applauded by his messmates. Long sea-voyages and the dearth of fresh water and soap inculcated personal habits that, to say the least, were unattractive, while many other details of naval life in those days not necessary to enlarge upon here made the standard of official deportment quite different from the present, and contributed to make sea society such that its tone was more liable to be benefited than detracted from by the incoming of the engineers, rude and uncultured as some of them were.

From this review of the actual conditions of the navy at that time it is obvious that the engineers in the majority of cases were very liable to be the social and intellectual peers of the sea-officers with whom they were thrown, and that an extreme case of illiteracy or uncouthness on the part of an engineer could easily be matched with a like case in the line, neither the one nor the other standing as the type of a class, as the extreme partisans of each faction have tried to make us believe. Nevertheless, and in spite of the fact that the engineer came into the navy as the sponsor for a new factor in war that was to immeasurably increase the fighting power of ships, his welcome, if welcome it can be called, was far from cordial. The traditions of the service took fright at his approach, and in too many instances he was regarded as the noxious embryo of a much to be avoided future, whose development should be checked and whose ambitions should be stifled at any cost,

irrespective of the real interests of the navy and the country; a sentiment that was very long-lived.

Mr. Haswell continued in the office of engineer-in-chief until December, 1850, when he was relieved by Charles B. Stuart, a civil engineer of prominence who laid no claim to knowledge of marine engineering. His was a purely political appointment made from private life as a reward for party service, and upon his resignation, in 1853, he returned to civil life, never having been recorded in the navy register as a member of the established engineer corps. After him the engineers-in-chief were chosen from among the chief engineers of the navy, although this was not made obligatory by law until 1862, the two who immediately followed Mr. Stuart being Daniel B. Martin and Samuel Archbold, the latter of these bringing us to the beginning of the Civil War, when the "old navy" passed away.

The engineer corps experienced a steady growth from its original membership of twenty at the date of the law establishing the corps until at the end of 1860 it numbered one hundred and ninety-two. Of the many vicissitudes and trials passed through by this new naval branch during these troublous years space here forbids us to speak. With persistence, patriotism, and courage the engineers steadily advanced in making themselves more and more useful to the service, and by their inventive talents and professional skill did much both in peace and war to improve and develop the combative capabilities of the national vessels; this they did in spite of much opposition and discouragement, and with the full knowledge gained by experience that much of the credit due them for successful achievements would be appropriated by others, and that the thanks that should come to them would be withheld.

Previous reference has been made in this brief sketch to the fact that many of the early engineers left the service in disgust, they having been quick to see that the application of their talents merely amounted to the labor of tilling and sowing where the harvest would be reaped by others. As many of these who resigned were possessed of such education and accomplishments as to make them the mental superiors of any class of officers then in the navy, one is at a loss to understand any reason for the policy that discouraged and drove them away, but whether with reason or not such a policy was pursued, and with success. From the establishment of the corps in 1842 until the end of 1860 no less than ninety-six engineer officers of the navy resigned, many of whom afterwards became eminent in various callings in civil life, and thus demonstrated the folly of the policy that had driven them out of the navy.

F. M. Bennett,
Passed Assistant Engineer U.S.N.

(To be continued.)

OUR SISTER REPUBLICS.

II.—BOLIVIA.

BOLIVIA, an interior state of South America, named after Simon Bolivar, the hero of South American independence, comprises a section of country lying between Chile, Argentina, Brazil, and Peru, with an area of five hundred and sixty-seven thousand four hundred and thirty English square miles, and a population of nearly two and a half millions, consisting of whites, Mestizos or Cholos (mixed white and Indian), and Indians belonging mainly to the Inca races.

In area, therefore, it is larger than Greece, Switzerland, Germany, Belgium, France, and the kingdom of Great Britain combined, or about the same as the States from New York down the coast to Mississippi inclusive, together with West Virginia, Kentucky, and Tennessee. The Atacama (or nitrate) district, although still claimed by Bolivia, will probably hereafter continue to be part of Chile.

The early history of Bolivia is one with that of Peru. The oldest remains of any record of history there are the cyclopean ruins near the southern shores of Lake Titicaca, at Huarez, Cuzco, and Huiñaque, and these indicate the existence of a prehistoric empire, which, about the eighth century, was broken up into separate nations, the Collas or Aymaras remaining in the Bolivian highlands; beginning about the tenth century they were again united under the Incas, who, in the sixteenth century, had built up an empire extending from the north of Quito to the southern part of Chile, the Collas being the last to be subdued (about the fourteenth century).

The great character associated with the history of Peru was Francisco Pizarro, born in Spain in 1471, and first heard of in America in 1510 as having taken part in an expedition from Hispaniola to Uraba; afterwards he accompanied Balboa to Darien, and became a cattle farmer at Panama, where, in 1522, he formed a compact with a priest, Hernando de Luque, and a soldier, Almagro, for purposes of conquest in the country to the south, rumors of a vast empire there having reached them.

In 1527, Pizarro reached the coast of Peru at Tumbez, and these rumors were confirmed. In 1528 he returned to Spain to obtain assistance, and in 1529 the arrangements with the crown for the conquest

of Peru were completed. In 1530 he returned to Panama and was joined by his brother Hernando. He sailed from that port in 1531 with three ships, one hundred and eighty men, and twenty-seven horses. In 1532 he again landed at Tumbez, and his army entered Caxamarca, where the Inca, who was on his way from Quito to Cuzco, was resting. In 1533, Almagro arrived with reinforcements, soon after which the Inca was murdered. Pizarro, however, allowed the nephew of the Inca to be crowned the next year.

In 1535, Pizarro founded Lima, and Almagro undertook an expedition to Chile. In 1536 the Incas resisted the invaders, and besieged the Spaniards in Cuzco; but Almagro, returning from Chile, raised the siege. In 1537, Almagro and Pizarro fell into dispute over the limits of their respective jurisdictions, and war followed. Meanwhile, in 1538, Pizarro sent his brother Hernando to annex the southern region (now Bolivia). In the war Almagro was defeated at Las Salinas, near Cuzco, and his son, Almagro the Lad, was set up by his adherents, who conspired at Lima soon after, and assassinated Pizarro in 1541. Vaca de Castro, who had been sent out by the emperor, now arrived and assumed the title of governor of Peru. In 1542 he defeated Almagro the Lad at Chupas, near Guamanga, and had the latter beheaded.

In 1544, Blasco Nuñez de Vela was sent out by Charles V. as first viceroy of Peru to enforce the new laws enacted in 1542, granting estates on which tribute was to be paid and personal service rendered, and which, on the death of the actual holder, were to pass to the crown, while at the same time *forced* personal service was forbidden. Great discontent resulted. Gonzalo Pizarro rose in rebellion, and with his followers entered Lima. The viceroy fled to Quito, but was followed, defeated, and killed at Anaquito in 1546. The new laws were nominally revoked, and in 1547, Piedro de la Gasco was sent out to restore order. In 1548 he defeated Gonzalo Pizarro at Xaquixaguana, near Cuzco, and the latter was executed. A redistribution of estates to the conquerors was made, which created much discontent. In 1551, Don Antonio de Mendoza arrived as second viceroy, but died in 1552, after which the country was ruled by the Court of Justice for a time. A revolt under Giron broke out at this time, and the army of the judges was at first defeated at Chuquinga, but in 1554 he was routed at Pucara, and executed. In 1555, Don Andres Hurtado de Mendoza came as third viceroy. He quelled all disturbances, sent the leaders back to Spain, and gave the Inca a pension; so that peace reigned once more. The cultivation of wheat, vines, and olives was instituted, and domestic animals were introduced at this time.

In 1559, Bolivia was formed into the *Audencia* (court of justice) of Charcas, or Upper Peru, governed by judges who resided at Chuquisaca (now Sucre), subject to the viceroy of Peru.

In 1569, Don Francisco de Toledo became viceroy, and he, fearing that the little court of the Inca, which had been permitted to exist in form, might become a centre of rebellion, beheaded the last of the Incas in 1571. The laws he established governed Peru for two centuries. About this time Jesuit missions were established in great numbers. Trinidad was founded in 1687, San Ignacio in 1689, San Javier in 1690, San José in 1691, San Borja in 1693, and Exaltacion in 1704.

In 1776, Charcas, or Upper Peru, was made a province of the new viceroyalty of Buenos Ayres. Viceroys continued to succeed one another in Peru proper, but we will follow the history of the part which is now Bolivia. The Indians had been for some time subjected to great tyranny, such as enforced personal service, tribute, and other modes of extortion; and in 1780, as a consequence, an insurrection headed by a descendant of the Inca, called Tupac Amaru, took place, and lasted for two years, but was finally put down.

When Buenos Ayres had liberated from the dominion of Spain the interior provinces of the Rio de la Plata, she turned against the common enemy in Upper Peru, and a warfare followed which lasted from 1809 to 1825. The patriot general Balcarce twice defeated the Spanish troops, but was finally himself defeated by the Spanish general Goyeneche in 1811, and driven back into Jujuy. The war was kept up, however, until in 1815 the patriots were completely routed in a battle between Potosi and Oruro. This ended the war; but in 1816 Laserna, the Spanish commander-in-chief, invaded the Argentine provinces. He was defeated and driven back, however, by the *gaucho* troops of Salta and Jujuy. In 1823 a large expedition under Santa Cruz was organized for the liberation of Peru at Lima, and marched on Upper Peru, but the army was routed by the royalist troops.

"Peru was fast relapsing to the last degree of distraction and political abasement. At this pressing emergency it was that Bolivar opportunely threw himself, his talents, fame, and influence, and all the disposable military resources under his command, into the cause of Peruvian independence, having obtained permission from the Congress of Colombia to quit the territory of the republic for that purpose, and leaving Santander to administer the executive authority in his stead.

"Bolivar made his public entry into Lima, September 1, 1823. He was received with the strongest marks of enthusiasm, and invested with the authority of dictator, which was needful enough in a country governed by two presidents, each at the head of a hostile army. In November, 1823, he marched to Pativilca, where he took a strong position, and devoted himself unceasingly to the task of organizing an army of adequate force to enable him to undertake offensive operations. . . .

"At the commencement of the campaign, the royalist army con-

sisted of nine thousand men under Canterac, in the valley of Xauxa, and five thousand under Valdez, in Upper Peru. Olañeta also, in Upper Peru, commanded another body of five thousand men, but had withdrawn his obedience from the viceroy La Serna, on the ground that the latter was a constitutionalist. The liberating army was concentrated at Huaras, preparatory to crossing the Andes, and compelling the enemy to a decisive battle. It consisted of about ten thousand men, forming three divisions of infantry and one of cavalry, commanded by generals Lara, Cordova, La Mar, and Necochea, with General Sucre as chief of the staff. Everything being done which the military skill of the best generals in South America could devise to facilitate the passage of the army to Pasco, and, when arrived there, to carry on the war in earnest, Bolivar reviewed his forces, August 2, 1824, on the elevated table-land between Rancas and Pasco, in the midst of the towering peaks of the Andes, and on the margin of the Lake of Reyes, the principal source of the Amazon. It is impossible to do justice to the enthusiastic excitement felt by the troops on this occasion. The scene, presenting one of the most magnificent prospects in the world,—the moment when a noble army was about to take the field to complete the political deliverance of a continent,—the troops themselves assembled from the extreme parts of South America for this lofty enterprise,—and their leader, the conqueror in a hundred combats, who had borne the standard of liberty in triumph from Caracas to Guayaquil,—all conspired to constitute such a conjuncture as happens but once in an age, and serves to form a fresh starting-point for the memory of successive generations. In surmounting the terrible defiles of the Cordilleras, the troops had sufficiently evinced their own spirit of determination. Confident of their courage and zeal, the Liberator caused an energetic address to be read to each corps of the army at the same moment, adapted to their peculiar circumstances, and conceived in that felicity of manner which, combined with a certain orientalism of expression, distinguishes his occasional productions. However vicious in taste it may appear when read in the closet, and by persons of less ardent temperament, it was exactly suited to the men and the season, and was received with cheers of enthusiasm by the assembled host.

"Only three days elapsed before the liberating army had an opportunity of manifesting its courage. On the 6th of August, on ascending a height, they suddenly obtained a view of the hostile columns, marching along as it were beneath them, a few miles off, on the plains of Junin. Anxious lest the royalists should escape, the patriot cavalry dashed forward and encountered the cavalry of Canterac, whose army was in full retreat. It was exclusively a cavalry action, fought with lance and sabre, not a shot being fired on either side. The impetuosity and superior discipline of the patriots proved irresistible; and after a short engagement the Spaniards were put to flight, and hotly pursued

to the very bayonets of their infantry. Canterac hastily continued his retreat, followed up by Bolivar, who entered Guamanga on the 24th of August, and in September advanced as far as Abancay. As the rainy season would soon commence, and Bolivar did not suppose the enemy would immediately resume the offensive, he quitted the army in October and repaired to Lima to attend to affairs there, leaving Sucre to exercise the chief command in his absence. Contrary to expectation, however, La Serna now concentrated his forces, and advanced in his turn upon the patriots, with a design to cut off their communications with Lima, and then destroy them by safe and bloodless means. But the impatience of his troops, weary of endless marches and countermarches among the horrid passes of the mountains, compelled him to relinquish his plan, and to give the patriots what they ardently longed to obtain, an opportunity of concluding the conquest by an appeal to the sword. The battle of Ayacucho, December 9, 1824, pronounced by competent judges the most brilliant ever fought in South America, and certainly the most fatal to Spain, was the consequence, and decided the destinies of Peru forever. La Serna being wounded and made prisoner, Canterac capitulated the same day, for himself and all the Spanish forces in Peru. . . .

"When the victory of Ayacucho left the provinces of Upper Peru free to act, the great question presented to their consideration was, whether Upper Peru should be united to Lower Peru, or reannexed to Buenos Ayres, or constitute an independent state. Under the auspices of the Liberator and of Sucre, a general assembly was convened at Chuquisaca in August, 1825, which declared the will of the people to be, that Upper Peru should become a separate republic, and decreed that it should be called Bolivia in honor of the Liberator. Here their functions should properly have ceased, with the fulfillment of the object for which they met. Regardless, however, of the limited extent of their powers, they proceeded to exercise the authority of a general congress. They conferred the supreme executive powers on Bolivar, so long as he should reside within the territory of the republic. Sucre was made captain-general of the army, with the title of Grand Marshal of Ayacucho, and his name was bestowed upon the capital. Medals, statues, and pictures were bountifully and profusely decreed, in honor of both Sucre and Bolivar. To the latter was voted a millon of dollars, as an acknowledgment of his pre-eminent services to the country. With the same characteristic magnanimity which he displayed on a like occasion in Lower Peru, he refused to accept the grant for his own benefit, but desired that it might be appropriated to purchasing the emancipation of about a thousand negroes held in servitude in Bolivia. Finally, they solicited Bolivar to prepare for the new republic a fundamental code, that should perpetuate his political principles in the very frame and constitution of the state.

Captivated by the idea of creating a nation from its very foundation, Bolivar consented to undertake the task, if, indeed, which has been confidently asserted to be the case, he did not himself procure the request to be made.

"The Liberator left Chuquisaca in January, 1826, and returned to Lima, to assist at the installation of the Congress summoned to meet there in February. He transmitted the form of a constitution for Bolivia from Lima, accompanied with an address, bearing date May 25, 1826."[1]

Upper Peru was thus the last region to be freed from Spanish troops. Sucre was the first president, but he was driven out of La Paz in 1828 and succeeded by Santa Cruz. In 1835 the latter invaded Peru, defeated Gamana, the leader of one of the two opposing parties there, and formed a confederation of North Peru, South Peru, and Bolivia, with himself as supreme protector; Chile, however, espoused the cause of Gamana and sent troops to Peru, which finally, at Jungay in 1839, defeated San Cruz, and the confederation was dissolved; Gamana became president of Peru and Ballivian of Bolivia. In 1841, Gamana made war on Bolivia, with a view to annexing the rich province of La Paz, but he was defeated and killed at Yugavi. After 1845 there was for a long time a succession of revolutions.

In 1879, Chile declared war on Bolivia to make good her seizure of the nitrate district of Atacama. In this war Chile defeated Bolivia and her ally, Peru, and Bolivia is now without a sea-coast. Daza, the president of Bolivia, was deposed by his own troops for cowardice, and was succeeded by Campero. M. Battista is the present president.

Physical Geography.—The grand features in the topography of Bolivia are the *Sierra*, the mountainous Andean region in the west and southwest, with Lake Titicaca on the borders of Peru, and the Montaña, or plains of the east and north, together with the Paraguay and Madeira Rivers. The mountainous region averages more than thirteen thousand feet above the sea, and is the highest region of its extent in America. It is a table-land capped by mountain chains and high peaks, rising more than twenty thousand feet. The Andes proper run along the western frontier, while the *Cordillera Real* runs parallel to it one hundred and twenty-five miles farther east. Between these two ranges are great elevated basins separated by an east-and-west range, the one in the north about Lake Titicaca, the other to the south, called the *Desertos de Lipes*, an arid, salt-marsh region. The *Nevado de Sorata*, or Illampu, the highest peak in the Cordillera Real, is nearly twenty-two thousand feet high, while Illimani is nearly as high; eastward are a number of spurs running out from the main chain. The valleys between the minor ranges are the richest portions of the country.

[1] "Bolivar and the Bolivian Constitution," *North American Review*, 1830, vol. xxx. p. 26 *et seq.*

The mountain district falls in a kind of terrace to the lowlands, and this terrace and the *Llanos de los Chiquitos*, in Eastern Bolivia, were probably once a part of the table-land of Brazil. The country bordering the Madeira River is a vast expanse of tropical forests, which extend some distance up the eastern valleys, but elsewhere the Bolivian highlands are without forest growth.

The deeper portions of the valleys afford field and garden fruits; in the heads of the valleys wheat, maize, and vegetables are produced; in the high plains potatoes, barley, and grasses are grown, and several species of cactus abound; the upper mountain regions are characterized by mosses and the hardier grasses. The river plains of Northern Bolivia constitute the richest rubber region in the world.

"Near the *Praia dé Tamandua* we acquainted ourselves with all the particulars respecting the collection and preparation of the caoutchouc, at the cottage of a Bolivian seringueiro, Don Domingo Leigue. As I have already stated, the Siphonia grows, or at least thrives, only on a soil wherein its stem is annually submerged by the floods to the height of three feet or more. The best ground for it, therefore, is the igapo, the lowest and most recent deposit of the river; and there, in the immediate vicinity of the seringals, may be seen the low thatches of the gatherers' huts, wretched hovels mostly, rendered tenantable during the inundations by the device of raising the floors on wooden piles of seven feet height, in which the canoe, the seringueiro's indispensable horse, also finds a protected harbor. Unenviable truly must be the life of the happy proprietor, who has nothing to do in the seringal during the wet season, and who then has ample leisure to calculate exactly the intervals between his fits of ague, and to let himself be devoured by carapanas, piums, motucas, and mucuims; under which euphonious names are known some of the most terrible of insect pests.

"Narrow paths lead from the cottage, through the dense underwood, to each separate tree; and, as soon as the dry season sets in, the inmate of the palace just described betakes himself with his hatchet into the seringal, to cut little holes in the bark. The milk-white sap immediately begins to exude into pieces of bamboo tied below, over little clay cups set under the gashes to prevent their trickling down the stems. The collector travels thus from trunk to trunk; and, to facilitate operations, on his return visit he pours the contents of the bamboos into a large calabash provided with liana straps, which he empties at home into one of those large turtle-shells so auxiliary to housekeeping in these regions, serving as they do for troughs, basins, etc.

"Without any delay he sets about the smoking process, as the resinous parts will separate after a while, and the quality of the rubber so become inferior. An earthen jar, without bottom and with a narrow neck, is set by way of chimney over a fire of dry urucury, or nauassu palm-nuts, whose smoke alone, strange to say, has the effect of instantly

coagulating the caoutchouc sap, which, in this state, greatly resembles rich cow's milk. The workman, sitting beside this 'chimney,' through which rolls dense clouds of a smothering white smoke, from a small calabash pours a little of the milk on a sort of light wooden shovel, always careful, by proper management of the latter, to distribute it evenly over the surface. Thrusting the shovel into the thick smoke over the opening of the jar, he turns it several times to and fro with great rapidity, when the milk is seen to consolidate and to take a grayish-yellow tinge.

"Thus he puts layer upon layer, until at last the caoutchouc on both sides of the wood has reached about an inch in thickness, when he thinks the 'plancha' ready. Cutting it on one side, he takes it off the shovel and suspends it in the sun to dry, as there is always some water between the several layers, which should, if possible, evaporate. A good workman is thus able to prepare five or six pounds of solid seringa in an hour. The plancha, from its initial color of a clear silver-gray, turns shortly into a yellow, and finally becomes the well-known brown of the rubber, such as it is exported."[2]

The cinchona-trees of the mountain slopes have been nearly exhausted in the more accessible regions; but the main reason for the deterioration in that production is the want of an easy outlet to the world's commerce. Coca grows wild, and is also cultivated. Wheat is grown in Cochabamba, and coffee in the upper valleys.

In the lowlands are tapirs, jaguars, pumas, ant-eaters, armadillos, sloths, monkeys, ostriches, etc.; in the highlands bears, condors, llamas, and vicuñas. Alpacas are raised for their fleece, llamas as beasts of burden, and sheep and cattle for food and other products.

Titicaca is the largest lake in South America, and the highest large lake in the world. It is fourteen times the extent of the Lake of Geneva, or nearly one-third that of Lake Erie, and its greatest depth is seven hundred feet.

The great rivers of the country are the branches of the Madeira (the Mamore, Beni, and Madre de Dios) and of the Puros, flowing northward, and those of the Paraguay (principally the Pilcomayo), flowing southeastward.

The geology of Bolivia is very little known. The Cordillera Real is composed in part of paleozoic rocks, and these are also found in the Titicaca basin, while bordering the Gran Chaco tertiary strata are found; in the Andes volcanic rocks are abundant, earthquakes (though usually slight) are quite common, and the volcanic peaks are often still active,—Sajama, Islùga, Tua, and Olca are constantly smoking.

"In minerals Bolivia is probably the richest country in South America, and heretofore they have formed the chief product. Silver is the most important metal, still constituting two-thirds of the value

[2] The Amazon and Madeira Rivers. Keller, 1875.

of exports. The former output of the Potosi and Porcos mines would seem fabulous were it not well attested; but there is little doubt that it may be equaled or exceeded with proper management. There are rich mines of gold and copper; tin, lead, and mercury are extracted from some of the silver ores, and beds of coal and iron are known."[3]

Bolivia lies mostly within the tropic zone, consequently, owing to the great differences in elevation and determined mainly by them, all varieties of climate occur; in the mountainous regions there are five zones of climate, from the snow-line (at fifteen thousand feet) down to the warm lower valleys. In the lowlands of the north and east it is very hot, with heavy rains; while to the south large elevated areas are almost without rain.

"In the *punas* (high plateaux) the air is always dry and perceptibly cold, though the temperature may rise high in the sun, and cold, cutting blasts of air from the mountains are of frequent occurrence. In the *valle* (heads of valleys) and upper *yunga* (deeper valleys) a perpetual spring seems to reign, and night frosts are rare. The western side of the Andes is completely rainless, all moisture-bearing clouds rolling up from the ocean being quickly evaporated, or condensed in the higher mountain regions in snow or hail; but the whole of the remaining eastern region of Bolivia has a rainfall. In the lowlands this is irregular in season; but in the upper regions of the puna and the cabezera de valle, a rainy season generally begins in the middle of November and concludes in the beginning of March, often accompanied by furious thunder-storms, with hail and snow in the higher regions. The climate of Potosi, at an elevation of thirteen thousand three hundred to thirteen thousand six hundred feet, is so various that in one day it frequently exhibits the vicissitudes of the four seasons of the year. Thus, during the night and the early part of the morning it is piercingly cold; in the forenoon it resembles our (English) fine weather in March; in the afternoon the rays of the sun in so pure and attenuated an atmosphere are very powerful and scorchingly hot; while towards evening the air usually becomes mild and serene."[4]

Gold is found in the mountainous parts, especially in a belt in the provinces of Larecaja, Yungas, Inquisivi, the department of Cochabamba and into Santa Cruz, and in the belt extending from Lipez province east, passing south of Tupisa and Cinti into Santa Cruz; alluvial washings occur at Suchez, Yani, and Chuquiaguillo; the gold washings at Tipuani were worked in the time of the Peruvian Incas. Silver has been mined since 1545, and the principal mines are now located in the provinces of Porco, Chuquisaca, Oruro, and Linares, and the departments of Oruro (Machacamarca district), Potosi (Potosi and

[3] Johnson's Universal Cyclopædia. New edition, 1893.

[4] Encyclopædia Britannica. Ninth edition, 1878. ("Bolivia," Keith Johnson.)

North and South Chicas districts), Chuquisaca (Chayanta district), and La Paz (district of the North). Copper occurs in the mountains adjacent to Corocoro, near the Desaguadero River, but also in Potosi, Chuquisaca, and Oruro. Coal and iron are obtained in Chuquisaca, Oruro, and Beni, hyacinth and opal in Santa Cruz, and diamonds in Beni.

Government.—Bolivia is a republic; its President and the first and second Vice-Presidents are elected directly, by the citizens who can read and write, for a term of four years. The cabinet consists of five ministers,—viz., Foreign Relations and Worship, Finance and Industry, Government and Colonization, Justice and Public Instruction, and War. The state recognizes the Roman Catholic religion only, but other religions are tolerated. The national colors are red, green, and yellow.

The legislative power is vested in the National Congress, composed of a Senate and a Chamber of Deputies, both elected directly by the people, the former comprising eighteen members (two from each department), the latter sixty-eight members at present. Sucre is the capital, but the government now resides at La Paz.

The country is divided into eight departments,—Sucre, La Paz, Potosi, Cochabamba, Oruro, Santa Cruz, Tarija, and Veni (or Beni). These are further divided into forty-six provinces, and these again into three hundred and sixty-three cantons and two hundred and seven vice-cantons. The principal cities, in the order of their population, are La Paz (fifty-nine thousand eight hundred and forty-nine), Cochabamba, Sucre, Potosi (twelve thousand), Santa Cruz, Oruro, Bernardo de Tarija, and Trinidad (four thousand five hundred and thirty-five).

The principal settlements of the lowlands are mission villages of Indians, founded by the Jesuits, and now in a state of decadence. The departments of Beni and Santa Cruz and the northern part of La Paz have been little explored, and are lands of tropical forests, rivers, and swamps, with a hot, damp atmosphere, but rich in valuable forest trees, and producing, where they have been occupied, coffee, cocoa, vanilla, sugar-cane, maize, and cotton, besides affording tracts of good pasture land.

The civilized population is generally confined to the highlands, and in the towns Spanish is commonly spoken. The inhabitants consist of whites, half-breeds or *Cholos*, *Quichuas*, *Aymaras*, and *Chunchos*. The whites are principally descendants of the Spaniards, and constitute the higher classes; the *Cholos* are the middle classes; the Quichuas are the most numerous and most highly civilized Indians, living mainly in Chuquisaca, Cochabamba, Potosi, Oruro, and on the northeastern shores of Lake Titicaca, extending into Peru, being commonly employed as servants in houses or as laborers in mines; the Aymaras, closely resembling the Quichuas, are in La Paz, and are the indigenous inhabitants of the plateaus, though now quite civilized, and constitute the bulk of the agricultural and pastoral population about

Lake Titicaca; the Chunchos occupy the interior of Chuquisaca, Santa Cruz, and Beni, and are wild and semi-civilized.

The country is well described by a recent traveler:

"These mountains are very rugged and precipitous, with many acute ridges and deep valleys. This majestic Cordillera of the Andes is one of the most imposing spectacles that I beheld in all South America. And I am not sure that Illampu, in its massive, sharp-tipped summit, does not surpass in grandeur and beauty the world-famous Chimborazo. Think, too, of the splendid coloring of the picture it was my privilege to enjoy,—first the dark green of the lake, then the brown of the hillocks, next the purple of the hills, afterwards the black and gray of the mountains, and finally the glistening white of the peaked, serrated summits, with a few fleecy clouds and the purest blue firmament above! I go no further, or I must rhapsodize. But, though I traversed a score of worlds, I can never forget the view of the great snowy Andes east of Lake Titicaca. . . .

"It required two coaches and a large wagon to carry all the passengers and their baggage on to La Paz. The coach on top of which I rode was a heavy vehicle of the American 'Concord' pattern. It was drawn by eight horses, while each of the other teams had the same number of mules. The road was good, and we changed animals twice. At one of the stations we obtained a substantial breakfast. On leaving the lake we entered at once upon a vast, level plain, in which maize appeared to be most cultivated, though the soil was very poor, a coarse sort of gravel. There were a number of huts scattered about, but no distinct villages, save one only, and this quite a town, about half-way between Chililaya and La Paz. The huts were made of mud bricks, and surrounded by low mud walls. They were not more than six feet in height from the ground to the top of the peaked straw thatch. There was only one opening, a diminutive door, excepting in some rare cases, where a small hole on one side allowed the escape of smoke. About many of the huts, and especially those of the stations, were stacks of coarse yellow straw, which is fed to mules and donkeys. The plain is a vast table-land, covered with gravel, stones, and lava-like substances. It produces only coarse grass. Not a tree or bush of any description was in sight. Though for a few square miles the land had been partially cleared of its stones, which were piled up in great heaps at regular intervals, cultivation was scarcely attempted. We passed a good many flocks of sheep, and many of the red- and black-spotted cattle, such as one sees in the neighborhood of Quito. In the far distance, to the southwest, the plain was bounded by a range of low brown hills, while to the east we had, during the whole day, a mountain view to which all the appropriate adjectives in the dictionary could not do full justice. As we rode on the sun beat upon us with intense fervor, and the dust rose so thickly from the arid plain that we could

not see the leading horses. We met only a few horsemen and a few loaded donkeys until, in the immediate vicinity of La Paz, many roads converged, and numbers of Indians trudged along, driving their loaded beasts before them. Of course, I inferred the proximity of the capital from the increasing number of travelers, but I certainly was not prepared for my first view of it. The table-land seemed all at once to come to an end, and to fall abruptly away to the depth of some twelve or fifteen hundred feet directly in front of us. We suddenly halted, and alighting, walked a few steps ahead to the edge of the plain, when at once appeared one of the most extraordinary spectacles I ever remember having encountered. . . .

"The plain fell away, as I have said, in a sudden descent, and then spread out into a valley, snugly ensconced in one corner of which lay the city of La Paz, capital of the republic of Bolivia. To the northwest the valley closed with views of Huani Potosi, peeping above its edge. To the east were great brown rocky hills, and to the southeast were others streaked with a red metallurgic rock of iron and cinnabar, still others being of a greenish clay deeply furrowed by the floods, which fall during the rainy season. Directly above them loomed the grand form of Illimani, to the height of twenty-four thousand one hundred and fifty-five feet. To the west was a splendid zigzag road, which we were to descend to the city. The valley in which lies La Paz is about three miles in width and ten miles long. As we took our view before descending to the bottom of this declivity, we could see before us only a few green fields and a few covered with yellow grain, but the soil seemed quite as barren as that of the great plain over which we had been riding. In the Grand Plaza I could plainly see the parade of some soldiers. . . . The Bolivian capital covers about two miles of ground in one direction, and a mile in the opposite. It is built mostly of mud and tiles, and a large proportion of the houses are two stories in height. The streets are lighted by kerosene-lamps placed in iron brackets projecting from the walls of the houses, as at Quito. No sidewalks, properly so called, are found, each side of the cobble-stone pavement having only a narrow flagging on the same level as the street. There is not a chimney in La Paz, for, though in winter the cold is frequently severe, the people know no method of warming their houses. Fires necessary for cooking are built against a wall quite out-of-doors, except for a flimsy sort of roof. Wood is so scarce and expensive in such a treeless region that llama-dung is everywhere used for fuel. . . .

"The streets of La Paz, although not crowded, are always bustling with people. The Grand Plaza is the general meeting-ground for the upper classes. Here they promenade up and down, or stand talking in groups at the corners. Officers dressed in brilliant uniforms—enormous gilt epaulets and sword, a blue coat, and red trousers with a

stripe of gold lace two inches in width—frequently pass. One imagines, from their very gaudy appearance, that none can be below the rank of major-general. As a striking contrast, in the narrow streets one often meets troops of laden llamas or donkeys, driven by muleteers wearing multi-colored *ponchos* and hempen sandals."[5]

The national debt in 1890 amounted to $5,699,500; the revenue for 1891 was estimated at $2,295,000, the expenditures at $2,497,000.

The United States has a minister at La Paz.

Industries.—"The natural wealth of Bolivia is very great. In the animal kingdom there are in the cold regions the alpaca, whose wool is especially fine and much esteemed in commerce, and the llama, the guanaco, and the vicuña, which are of the same species. The wool of the last named is used for very fine cloth. There are found also the chinchilla, the nutria, and other fur-bearing animals. In the temperate regions abound the wool-bearing animals, the hairy goat, as well as cattle, horses, and mules. The African dromedary is acclimated in the south of Bolivia, where it lives and breeds. In the hot regions are found ordinary cattle, the sloth, the anta (or great beast), a great variety of deer, birds of all kinds, and many kinds of fish in its rivers. The vegetable kingdom is also extremely rich and varied, furnishing very fine cabinet, dye, and building woods; the coca, whose medicinal properties the pharmacopœia utilizes as the best local anæsthetic; the coffee of Tungas, which competes with that of Mocha; the cacao, which is claimed to be superior to that of other countries of South America; vanilla, sugar-cane, gum-elastic, or caoutchouc, which is found in inexhaustible quantities; corn, wheat, potatoes, sweet potatoes, yucca, plantains, and tubers of all kinds; all the fruits, grains, and vegetables known in temperate and tropical climates; cotton, of three different natural colors; the cork-tree, which furnishes corks; the wax-tree; quillay, or vegetable soap; linseed, agave, hemp, etc. Among medicinal products there are cinchona, jalap, sarsaparilla, tamarind, palma Christi, copaiba, ipecacuanha, gum arabic, camphor, tobacco, balsams, etc.

"The chief wealth of Bolivia is her mineral deposits, but insufficient communications have greatly retarded their development. Gold and silver are found in great abundance throughout the entire country. The silver production of 1890 was about 603,791 pounds, and for six months (in 1891), 373,627 pounds. The total value of the output of 1890 was estimated at 11,020,691 bolivianos, and that of the silver mines from 1545 to 1826 at 3,406,366,035 Spanish milled dollars, and from 1826 to 1846 at 39,101,022 pesos. The copper is of superior quality. There are also many mines of tin, lead, bismuth, mercury, platinum, iron, zinc, coal, rock-crystal, alum, magnetic ore, talc, etc. Of precious stones there are found emeralds, opals, agate, lapis-lazuli,

[5] Around and about South America. Vincent, 1891.

alabaster, berenguela (a species of translucent alabaster), and jasper; marbles of all kinds and colors, slates, pumice-stone, granite, syenite, porphyry, basalt, chalk, saltpetre, borax, common salt, magnesia, etc., are more or less abundant."[6]

The commerce of Bolivia is much more considerable than is usually given in the public statistics, because it has always imported most of its foreign products and exported its own products through the port of Arica in Peru.

The great want of Bolivia to-day is safe and easy means of communication with the outer world to make her products available for commerce.

The principal routes now used are the following: (1) the Arica route, a land transit of two hundred and forty miles, by means of mules, donkeys, and llamas, from La Paz over the Cordillera to Tacna, and thence forty miles by railway to Arica, on the coast,—nearly twenty million pounds of freight are taken over this route annually; (2) the Mollendo route, by steamers up the Desaguadero River and across Lake Titicaca to Puno, thence by rail across Peru to the port of Mollendo,—the traffic by this route is very great; (3) the Antofagasta route, an all-rail route from Oruro to Antofagasta, on the Pacific Ocean; (4) the Argentine route, a land transit of seven hundred and seventy miles from Pupiza and Tarija to Jujuy and thence by rail to Rosario, on the Parana River, and by steamer to the Atlantic,—the annual traffic amounts to one million dollars; (5) the Paraguay route, from Puerto Suarez and Puerto Pacheco down the Paraguay River to the Atlantic Ocean,—the projected railways from Santa Cruz to Puerto Pacheco and from Asuncion to Sucre will make this one of the most important and profitable routes; (6) the Amazon River route, from Villa Bella by the Madeira and Amazon Rivers to the Atlantic Ocean,—valuable for the immense rubber exports.

"The world almost forgets that several powerful states lie sunning their Atlantic fronts in the same valley; and that Bolivia, the richest of them all, only awaits the removal of the obstacle of the rapids of the Madeira River to pour an astonishing agricultural and mineral wealth into the marts of commerce.

"It may truly be said that the real development of the Amazon valley will not be commenced until these rapids are avoided by a railway; for, traversing the territory of Bolivia, and converging upon this point, there are three thousand miles of great navigable streams within very easy reach of two millions of the population of that country,—that is, four-fifths of the entire population of the Amazon basin are found in the valleys and rich *pampas* that flank the Bolivian Cordillera. To-day they have a forced communication with the world *via* Cape Horn and the Andean passes, the lowest of which, facing

[6] Hand-Book of the American Republics, 1892.

Bolivia, is 14,800 feet above the sea. The only barrier, therefore, which shuts out numerous cities of from 10,000 to 83,000 inhabitants from rapid contact with Europe becomes of considerable geographical and commercial interest."[7]

"The commerce of Bolivia is mainly with Germany, Great Britain, and France, and in the order named. There is also considerable trade with Chile, Peru, and to a limited extent with the United States. The chief imports are cotton and woolen manufactures, silks and fancy goods, articles of millinery and men's furnishing goods; hardware and cutlery, steel and iron; china, crystal, and porcelain ware; furniture, including brass and iron bedsteads; jewelry, clocks, and watches; drugs, wines, and liquors; preserved fruits and meats; sugar, flour, kerosene, mining machinery and tools, iron bridges, carriages, railway supplies, etc.

"The exports are silver, lead, tin, copper, bismuth, borax, sulphur, hides, leather, furs, alpaca and sheep wool, guano, a superior quality of Peruvian bark known as calisaya, rubber, cacao, and a small amount of coca and coffee."[8]

A railway from Antofagasta, a Chilean port, to Oruro is completed, and another runs from La Paz to Lake Titicaca; a new line from Arequipo, in Peru, to La Paz is projected; and the line from the Argentine Republic has almost reached the frontier. There is telegraphic communication with Peru, Chile, and Argentine.

The schools of Bolivia consist of primary schools, colleges, lyceums, and universities; attendance at the primary or free-schools is generally compulsory (except for the Indians). There are four hundred and ninety-three common schools, with twenty-four thousand two hundred and twenty-four pupils, sixteen colleges and lyceums, with two thousand one hundred and twenty-six students, and five universities, with one thousand three hundred and eighty-four students, besides a military school and two industrial colleges, recently established in La Paz.

The monetary unit is the silver *boliviano*, of one hundred centesimos, which is now (1892) worth 69.1 cents in United States currency. The other coins are the 5, 10, 20, and 50 centimo pieces, also 15 and 30 centimo pieces, in silver, the 5 and 10 centimo pieces in nickel, and 1 and 2 centimo pieces in copper. The paper currency is issued by the Banco National and the Banco de Potosi, and consists of notes of the value of 1, 5, 10, 20, 50, and 100 bolivianos; in practice the 1, 5, and 10 boliviano notes are torn in two and the halves circulate at the half value.

Officially the metric system of weights and measures has been adopted, but the people prefer the old Spanish system. The *vara* is about 0.914 of a yard, the *square vara*, 0.835 of a square yard; the

[7] *Harper's New Monthly Magazine*, vol. xliv., 1872, p. 449 *et seq.*: "Northern Bolivia and its Amazon Outlet," Col. G. E. Church.

[8] Bolivia. Bureau of the American Republics. Washington, 1892.

league is about 6.666 varas, or 6.18 yards; the *ton* is twenty hundred-weight; the hundred-weight, or *quintal*, is equal to four *arrobas* (quarters), or 101.4 pounds avoirdupois; the *arroba* (of liquid measures) is 8.044 gallons; the *galon*, 0.999 of a gallon; the *cajon* is 50 *quintals*, and the *marco* 8 ounces (both used in weighing minerals).

Army.[9]—The regular army is very small, not over nine hundred men. By the laws of 1875 and 1880 military service for a term of two years was made obligatory, but the laws never actually took effect, the small force deemed necessary being raised by conscription from the lowest class. The strength of the army was limited in 1887 to fourteen hundred men, but in 1889 it was reduced to two battalions, of four companies each, each battalion two hundred men strong, with sixty men as a garrison for La Paz, making in all five hundred infantry; two squadrons of cavalry, three hundred men; and one squadron of mountain artillery, one hundred men; a total of nine hundred men. Besides this number, which included only the non-commissioned officers and the privates, there were three hundred and sixty-seven superior officers, and six hundred and fifty-four subaltern officers in actual service.

In 1890 a conscription law was passed making military service compulsory from the age of twenty-one to that of forty, in the active army, the reserve, and the inactive army. There are now in service, receiving pay from the general government, about seven hundred officers and eight hundred and eighty men. The annual cost of the army is about one and a quarter million dollars.

The army is now (1892) organized as follows:

General Staff.—One general of division, one general of brigade, four colonels, seven lieutenant-colonels, four commandants, six majors, seven captains, four first lieutenants, two second lieutenants; total, thirty-six.

Courts-Martial.—The republic is divided into three military districts: 1, the North, comprising the departments of La Paz and Oruro; 2, the Centre, comprising Cochabamba, Santa Cruz, and Beni; 3, the South, comprising Chuquisaca, Potosi, and Tarija. A court-martial is located at the capital, one at Sucre, and one at Cochabamba. The officers of these courts are: three generals of brigade, two colonels, one commandant, one major, and one sub-lieutenant.

Departmental General Staff.—Three colonels, five lieutenant-colonels; total, eight.

Adjutants of Prefectures.—One commandant, two majors, one captain, two first lieutenants, one second lieutenant, one sub-lieutenant; total, eight.

The Line.—Two battalions of infantry, Sucre and Arce, four hundred and thirty men; two squadrons of cavalry, Bolivar and Escolta

[9] Information obtained from Military Information Division (Assistant Adjutant-General Babcock in charge), A. G. O., War Department.

(and the President's guard), three hundred and six men; and one squadron of mountain artillery, one hundred and forty-four men; total, eight hundred and eighty men.

Each soldier receives eighty-five centavos daily, of which he is required to pay five for tax, thirty to charity, and ten to the hospital fund, leaving forty free to pay for his expenses.

The pack, saddle, and draught animals are distributed as follows: to the battalion Sucre sixty mules, to the battalion Arce sixty-one mules, to the artillery squadron one hundred and two mules, to Bolivar squadron one hundred and fifty-two horses and twenty mules, to Escolta squadron one hundred and ninety-eight mules, to the President's guard fifty mules, and for transport wagons sixty-one mules. The officers on duty in the line number one hundred and twenty-five.

In each company there is an elementary school for privates, and the higher organizations have so-called *regimental schools* for officers and men.

The drill regulations of the infantry (*Instruccion de Batallon en el orden abierto para los cuerpos de Infanteria del ejercito Boliviano*) bear date 1882, and are based on the European open order system.

The Home Guards (Garrison Columns) are on duty in the different departments, as follows: in Chuquisaca, one hundred men, in Cochabamba, one hundred, in Oruro, one hundred, in Potosi, one hundred, in Tarija, forty, in Uyuni, forty, and in Tupiza, twenty; total, five hundred men. The total number of officers on duty with these men is one hundred and four.

Other officers are on duty as follows:

Courts-Martial.—Two generals of brigade, one major, one sub-lieutenant; total four.

Military Academy.—Located at La Paz. Its officers are one general of brigade, two commandants, two majors, one captain, one first lieutenant, one sub-lieutenant, surgeon (professor of hygiene), treasurer, and librarian, with fifty students. The age of admission is from twelve to eighteen.

There is also an artillery school with a few students.

Boards of Roads.—On this duty there are fourteen officers.

Chiefs of Parks.—These, with their aides, number six officers.

Other Boards.—On various other boards are sixteen officers.

Military Reserves.—These are chiefs and officials, rated as officers: at Sucre, twenty; at La Paz, one hundred and seventeen; at Cochabamba, forty-five; at Potosi, sixteen; at Oruro, twenty-five; at Santa Cruz, ten; at Tarija, twenty-three; total, two hundred and fifty-six.

The war material is mainly concentrated at Oruro, although small quantities are at Sucre, Cochabamba, and La Paz; stores are also accumulated at Potosi and in Tarija.

JOHN P. WISSER,
First Lieutenant First Artillery.

ORIGIN AND DEVELOPMENTS OF STEAM-NAVIGATION.

(Continued from page 348.)

FIRST STEAM-VESSELS IN RUSSIA.

1815.—Steam navigation was adopted in Russia at an early date. Mr. Baird, superintendent of the mines, made the first experiments in 1815 with an open boat of his own construction, fitted with a four horse-power engine, with which he made his first trip from St. Petersburg to Cronstadt and back on the 15th of November. In 1816 he built a steam-vessel of larger dimensions, with an engine of twenty horse-power, for conveyance of passengers between the two places. For twenty years he had the exclusive privilege of furnishing the Russian metropolis with steamboats for mercantile purposes. The first government steam-vessel, the "Rapid," was constructed at the Ishora yard in 1816, and was of thirty-two horse-power. The first Russian steam-vessel armed with guns was built in 1826. The Neva was the first river in Russia on which steamboats were applied. The Caspian Sea, in 1844, was navigated by four steamboats, each of forty horse-power. The first steamboat introduced into Siberia was built in 1843, and employed on Lake Balkan. She was of thirty-two horse-power, and called the "Emperor Nicholas."

In the *American Daily Advertiser* of November 27, 1816, there appears the following notice of a new steamboat to run between New York and Baltimore, commanded by Captain Moses Rogers, who three years later further immortalized himself, in connection with steam navigation, by commanding the "Savannah," the first steam-vessel that ever crossed the Atlantic:

"NEW STEAMBOAT.—On Tuesday last the elegant steamboat 'New Jersey,' Moses Rogers master, sailed from this port for Baltimore. This boat is coppered completely, and furnished with powerful *copper boilers*. She is finished in a style superior to any ever built in this place; the workmanship of the main and ladies' cabins is executed with great taste and with every possible accommodation for passengers.

"Her engine was constructed by Mr. Daniel Large, of this city, engineer; it appears to be an improvement of the plan proposed by Mr. David Prentice, and exemplified in one of the ferry-boats on the Delaware. The cylinder is fixed upon an inclined plane, and the shafts of the two wheels are furnished with a crank common to both, which crank, by a connecting-rod, puts the fixtures of the cylinder and air-pump in motion without that tremor and noise which is so injurious to steamboats in general, and unpleasant to the passengers. Her speed, in the trials which have been made, exceeds that of the fastest boats at their commencement, and if she continues to improve she will be one of the most expeditious steamboats in the United States. No expenses have been withheld; every opportunity has been employed to fit her for the station in the line of steamboats for which she is intended, between *Baltimore* and *Elkton*. Captain Rogers was also the *first who went to sea in a steamboat;* he navigated the 'Phœnix,' in 1809, from New York to Philadelphia; in 1813 he navigated the 'Eagle' from this port (New York) to Baltimore, and now, towards the close of November, he proposes to conduct this steamboat to the capes of the Delaware, and from thence to Baltimore, by way of Norfolk, in Virginia."

1816.—Nicholas J. Roosevelt, in the following advertisement, claims the invention of vertical paddle-wheels for steamers, and for which he obtained a United States patent in 1814:

"STEAMBOAT NOTICE.

"ALL persons are hereby informed that I claim the right of Inventor of Vertical Wheels, as now generally used for Steam Boats throughout the United States, having been first used, after my invention, in the *North River* Steam Boat, by Messrs. Livingston & Fulton.

"I have obtained a *Patent* in due form of law, for my invention, which is dated the 1st day of Dec. 1814.

"No other person in the United States has any *Patent*, but myself, for the invention of *Vertical Wheels*. Having obtained a *legal* title to the sole use of steam boats *with such wheels*, I hereby forwarn all persons from using them hereafter without license from me. The patent and evidence of my right are in the hands of Wm. Griffith, Esq., of the City of Burlington, my Counsel-at-Law.

"On this subject, so very important to me (being the only real and efficient invention since Fitch's Boat), I do not by this notice challenge controversy, but am prepared to meet it in any form. My object is to *make known*, that I am the inventor, and have the *Patent* right. Individuals or companies who use such wheels without my license after this, will be prosecuted under the Law of Congress, for damages

amounting to the profits of the boat. Licenses will be sold under me at moderate rates, and warranted.[1]

"NICHOLAS J. ROOSEVELT.

"BURLINGTON, N. J., 4th March, 1816."

1816.—The first steamer specially built at Liverpool for the purpose of a ferry was the "Etna," which in April, 1816, began to ply between Liverpool and Traumere. She was sixty-three feet long, with a paddle-wheel *in the centre*,[2] her extremities being connected by beams, and her deck twenty-eight feet over all. This primitive vessel initiated the transit by the numerous ferry-boats which now bridge the Mersey.

March, 1816.—The "Majestic" was the first steamboat that crossed the English Channel from Brighton to Havre. She was built at Ramsgate, and had engines of twenty-five horse-power, and was considered a gigantic concern. Her crossing from Dover to Calais with two hundred passengers and return without accident was a highly appreciated feat. The "Majestic" established the superiority of steamboats over other means of water conveyance. The sailing-packet between Margate and Ramsgate was often detained two days by calms and tides. The steamboat passed and repassed the sailing-packet loaded with passengers. On one occasion, the third night out, the packet caught at anchor in a sudden northerly gale, lost much of her gear, and the next day, while the gale was stronger, had the mortification of seeing the "Majestic" pass and convey her passengers into Margate.

1816.—The first line of steamboats from New York to New London, Connecticut, was established in 1816. On the 28th of September, 1816, the "Connecticut," Captain Bunker, arrived from New York in twenty-one hours,—which was regarded as a signal triumph for steam, the wind and the tide being against her. In October a regular line commenced making two trips per week to New Haven; the "Fulton," Captain Law, at the same time running between New York and New Haven. The price of passage was five dollars to New Haven, and from thence to New York four dollars.

Jonathan Morgan, Esq., of Wiscasset, Maine, a well-known and eccentric citizen of Portland, Maine, in 1816 ascended the Kennebec River by steam. In June, 1818, this boat, the "Alpha," of fifteen

[1] "NOTE.—Although my Patent assures me a legal right, any person may be further satisfied of my just claim by recurrence to the evidences in the hands of my Counsel-at-Law. They consist principally of *original* letters between Chancellor Livingston, Mr. Stevens and myself, on this very thing, at *the time of my invention*, accompanied with depositions of many persons witnesses of, and knowing to the fact.

"N. J. R.

"March 15, 1816."

—*Philadelphia Newspaper, March 16, 1816*

[2] This was like Fulton's ferry-boats in New York in 1810.

tons, was sold at "public vendue" by a constable of Wiscasset for eighty-seven dollars. The boat was a long, narrow, flat boat, and the machinery being taken out she was converted into a fishing-vessel. The steam-power was applied to a screw-propeller in the stern. Her boiler was built of pine plank, and about the size of a common molasses hogshead, into which was fixed a fire-box of iron. An endless chain connected the engine with her propeller. The machinery was invented and designed by Jonathan Morgan, who anticipated a fortune from its invention.

The first trip of the "Alpha" up the Kennebec was as far as Augusta. At Hallowell the boat halted, when many visitors inspected the strange craft. Mr. Morgan came on shore, and Page & Bemant, to encourage the enterprise, made him a donation in money. Leaving the wharf, she was unable to stem the current, and was carried sidelong across the river and fell back to Clark's wharf, lower down. At last she gained sufficient headway to proceed up river to Augusta, where she was greeted with many cheers. Mr. Morgan, who removed to Portland in 1820, was so ashamed of his failure that he never wished to have it spoken of.

THE FIRST ENGLISH STEAM-TUGS.

1816.—It has been asserted that the first application of steam for the purpose of towing vessels was made in October, 1816, when the "Harlequin" was towed out of the Mersey by the "Charlotte," a steamer which, in the summer of the same year, had been placed as a ferry-boat to run between Liverpool and Eastham.[3]

In 1819, Mr. Rennie, who planned the breakwater at Plymouth, England, was the "advising engineer" to the Admiralty, and on every occasion urged the application of steam-power to vessels of war. He hired at his own cost the Margate steamboat "Eclipse," and successfully towed the "Hastings," 74, against the tide from Woolwich to Gravesend, June 14, 1819. In consequence of this feat, Lord Melville and Sir George Cockburn, R.N., urged the great value of steam-power for towing men-of-war.

In his "Local Records," 1857, Mr. Latimer perpetuates the memory of The Tynesides, who introduced steam-towing: "Died in Gateshead, September 27, 1852, aged 81, Mr. Joseph Price, glass manufacturer, who was the first to apply steam-vessels to the towing of ships to and from sea, in adverse winds, for which he received a handsome testimonial in 1818."[3]

In Gateshead the first English steamboat was built. It was launched from the South Shore in the month of February, 1814; and

[3] The "Charlotte Dundas," it should be remembered, however, was built for a tow-boat, and we have already shown that Fulton's steam-battery was towed on one occasion by the "Car of Neptune" and "Fulton."

the glass manufacturer took an interest in the question of navigation by steam. In his retrospect, July, 1838, "To Merchants, Manufacturers, Shipowners, &c.," he tells us that, "In 1815 he became a shareholder in a steamboat speculation on the Tyne, which was continued for two years, when the boats, becoming out of repairs, were laid up." Fertile in resource, Mr. Price devised a new use for the boat with wheels,—a contrivance that was celebrated in song by his townsman, Wilson, author of "The Pitman's Pay."

"Steam neist cam' puffin' into play,
And put an end to rowin';
When Price said, in his schemin' way,
'Let's try the chep at towin'.'"

"July, 1818," Mr. Price "conceived good might be done by towing vessels to sea." "In furtherance of my idea," as may be read in his address of 1838, "I applied to the late Mr. Robson, wharfinger of Newcastle, for leave to try an experiment with one of his loaded vessels, which was granted. I gave notice to Captain Copeland, of the *Friends' Adventure*, Hull trader, to have all ready from an hour to an hour and a half before highwater. At the time appointed I requested him to throw a line on board the steamer. The tide was against us the first three miles. Everything answered as well as I could wish, and the vessel was towed two miles over the bar in two hours and ten minutes—a distance of thirteen miles—the wind against us all the way. *This was the first time a sailing vessel was ever towed by a steamboat.* The public did not at first appreciate my endeavors for expediting the sailing of ships in adverse winds. On the contrary, I was told I had ruined the port. I continued my two steamboats, the *Eagle* and *Perseverance*, in this employ, with little benefit to myself, for my captains were so timorous they would not stir but in moderate weather. They once had an offer to tow two ships with one boat. They would on no account undertake so heavy a task."

The "Perseverance" was originally known as the "Tyne Packet," or "Tyne Steamboat," and afterwards called by a distinctive name when she was no longer alone on the river. Mr. Price's example led the way to general traction by steam. "After a considerable interval other owners of steamboats saw the advantage of the towing system, and employed theirs in a similar manner, receiving pay according to the depth of water the sailing vessels drew. The advantage to the ship-owner was great. Previously no vessel over 240 tons register ever attempted to come up to Newcastle. After the introduction of the towing system vessels of 400 tons register were brought up; and vessels that previously averaged only eight voyages in the year between the Tyne and the Thames were able to average thirteen voyages, thereby keeping the coal market regularly supplied, and preventing those great

fluctuations in prices which formerly had such a serious effect in increasing the misery of the poor."

The towing system, Mr. Price says, was in 1821 adopted between Hull and Gainsbrough; in 1826 at Liverpool; "afterwards at Montreal, where a large steam-vessel towed from three to four ships at once from Quebec in less than forty-eight hours, then thought a heavy task, considering the strong current she had to contend against. Previously, ships going to Montreal required from two to three weeks to complete the distance."

Mr. Price's services were recognized on the Tyne by a banquet and the presentation of a silver tankard bearing the following inscription:

Presented to Mr. Joseph Price
by the
Shippers and Manufacturers of Lead,
and the
Wharfingers of the Goods Trade between
Newcastle and London,
as a mark of their approbation for
his zeal and spirited exertions
in the Application of Steamboats to the Towing
of Vessels on the River Tyne.
1818.

PROGRESS OF STEAM NAVIGATION IN ENGLAND.

1819.—The first steamers on the line between the Mersey and the Clyde were the "Robert Bruce" and the "United Kingdom," which began to ply regularly in 1819, between Liverpool and Glasgow. The following is the advertisement of the first return voyage from Liverpool to Glasgow of the pioneer vessel, "Robert Bruce":

"SAFE AND EXPEDITIOUS TRAVELING BETWEEN LIVERPOOL AND GLASGOW.

"The elegant new steam-packet 'Robert Bruce,' Captain John Paterson, will sail from Glasgow to-morrow (Tuesday), the 23d of August, at eight o'clock in the morning, from the George's Dock pier-head. The accommodation of passengers is most excellent, and she is expected to perform the passage within thirty hours. The fare in the cabin forty shillings, steerage twenty-one shillings; passengers *will be accommodated with provisions* at moderate terms. For passage apply to Captain Paterson, or to John Richardson.

"LIVERPOOL, 22d August, 1819."

The first steam-vessel employed in the Irish trade with Liverpool was the "Waterloo," built at Greenock, and launched on the 18th of June, 1819. Being fitted with engines and other requisites for a passenger steamer, she proceeded to Belfast to ply between that port and

Glasgow. Her destination was soon changed, and she was placed on the line between Liverpool and Belfast. Her first arrival was thus announced in the Liverpool *Mercury* of July 23, 1819:

"Yesterday a beautiful steam-packet arrived at this port from Belfast, after a passage of only twenty-four hours. She is called the 'Waterloo,' and is a fine, well-built vessel, burden two hundred and one tons, length ninety-eight feet, breadth on deck thirty-seven feet, and has two highly-finished steam-engines of thirty horse-power each, which work without noise or vibration, and are on the low-pressure construction, perfectly safe from accident. They are attended by two experienced engineers. The vessel is provided with two masts, with sails and rigging. Her interior accommodations are as complete and elegant as skill and expense can make them. She has a handsome dining-room, capable of accommodating all the cabin passengers, a separate and neatly decorated cabin for ladies, and two apartments for private families; twenty-two well-furnished beds, each accommodated with light and air; and a comfortable place for steerage passengers. She cost nearly ten thousand pounds. She will sail for Belfast at tide time to-day, and will return on Monday. She will sail the same day, and regularly every Monday and Friday. Fares, cabin, £1 11*s.* 6*d.*; steerage, 10*s.* 6*d.* The cabin passengers *are not under the necessity of taking provisions*, as they are well accommodated on board with everything at the most moderate prices."

The "Waterloo" was soon transferred to the more important traffic between Liverpool and Dublin, where her success resulted in the employment of more powerful steamers.

This detailed account of so small a steamer may be pardoned when we consider that the "Waterloo" was the germ and pioneer of the magnificent steam fleet which now sails in and out of the port of Liverpool. It is no longer necessary to caution passengers they are not under the necessity of provisioning themselves.

1817.—Herbert Lawrence, who died in 1882, aged ninety-four, built in 1817 the "Bolona," the first steamboat commanded by Cornelius Vanderbilt. Her model is in the possession of his son, William H. Vanderbilt. Mr. Lawrence remembered the trial trip of the "Clermont," and was thus a connecting link with the origin, gradual growth, and present state of steam navigation.

1817.—THE "FIREFLY."—On Monday, the 26th of May, 1817, the "Firefly," Captain Smith, arrived at Newport from New York. The sea was very rough as she rounded Point Judith, and she was twenty-eight hours in making the passage. She was intended to ply between Providence and Newport, and made her first trip to Providence on the 28th, leaving Newport at 9 A.M. and reaching Providence about noon. A sloop brought news of the approaching steamboat, and long before noon the wharves were crowded with people awaiting the

arrival of the strange craft. At last she came wheezing and puffing up the river to where the Crawford Street bridge now stands; then, turning about, ran up to her wharf and made fast. A gentleman doing business in the Arcade in 1877 remembered being held aloft in his father's arms to see the boat come in. He described the "Firefly" as an ugly little thing, full of machinery and awkward in her motions. The people cheered, however, and shouted and looked her over as we would now inspect a balloon just arrived from St. Petersburg.

June 28, the "Firefly," with Governor Knight, United States Marshal Dexter, and others on board, sailed at 7 A.M. for Newport, to meet and escort President Monroe to Providence. He went, however, in a revenue cutter to Bristol, where he embarked on the "Firefly," reaching Providence about 9 P.M. On landing he was received by a salute of cannon and the ringing of bells. The next day he proceeded to Boston. On the 26th of July the "Firefly" made a "cherry" excursion to Fall River, two dollars being the charge for the fare and dinner.

The packet-masters resorted to every lawful means to break down the new enterprise. The "Firefly" was no match for a fast sloop with a favorable wind. She hoisted a huge square-sail when the wind was fair, but the packets would often come into port ahead. The packet captains even carried their opposition so far that they would stand upon the "Firefly's" wharf just before her hour of starting and offer to carry passengers to Newport for twenty-five cents, or for nothing if they did not get there in advance of the "Firefly." In this way in four months they succeeded in running her off.

Then the packetmen held a meeting on the packet wharf and denounced the interlopers in striking and powerful language, after which they adjourned to a convenient packet and drank confusion to steamboats. Packets in those days furnished the best means of transportation between Providence and New York. The sailing of a mail-packet for New York aroused more attention than is now paid to the departure of an ocean steamship. Passengers came to the boat accompanied by relatives and friends. The master of the boat would bring out his stately decanters, and place a whole row of glasses on the mahogany table in the cabin. Then a solemn health would be drunk to the prosperity of the voyage.

The packets were beautifully modeled, sloop-rigged vessels of from seventy-five to one hundred tons burden, built with a view to speed, carrying capacity, and comfort. The sides of some were adorned with bead-work; others had polished strips of hard pine let into the sides, and all were painted in gay and lively colors. The cabins were frequently finished and furnished with mahogany, and decorated in every imaginable way. These cabins averaged twelve feet square, and from them opened tiny state-rooms.

Packets sailed from Providence for New York every week; the trip was of varying length. The "Huntress" often came through in eighteen hours, but sometimes the voyage lasted a week. The fare was ten dollars, including meals. Over the cabin stairs hung a mahogany letter-box, and on arrival there would be a rush of people to the packet to get letters in advance of the slow mail plodding over the post-roads. As soon as the immediate business of landing was over the captain would pour the contents of the letter-box upon the mahogany table, and after the distribution of letters the decanters were produced and everybody drank the captain's health. "Captain Whipple Brown, one morning, unloaded from his sloop seven hundred and fifty thousand dollars in silver. There were five thousand dollars in a keg, and kegs enough to load fifteen baggage-wagons, which before sunrise set out for Boston with two well-armed guards in charge of each wagon."[4]

Seventeen large steamboats were, in 1817, in constant employment on American rivers besides ferry-boats.

FIRST STEAMBOATS IN BOSTON.

1817.—The steamboat "Massachusetts," in 1817, introduced steam navigation to Boston early in June. She was owned by Joseph and John H. Andrews, William Fettyplace, Hon. Stephen White, and Andrew Watkins, of Salem, and Andrew Bell, of Portsmouth, New Hampshire, and was intended to run between Salem and Boston. She was of two hundred and thirty tons register, and had an engine of thirty horse-power. She made a few trips between Salem and Boston, but not being well patronized, in the autumn, or early in the winter, was sent south to Charleston or Savannah, to be sold, and was lost on the passage on the coast of North Carolina. On her arrival in Salem she was called by the *Enterprise* the "Brilliant North Star." She made her first trip from Salem to Boston July 4, 1817, leaving Salem at 8 A.M.; she arrived at Boston at 11 A.M., her greatest rate of speed being eight miles an hour. In consequence of some damage to her machinery she did not return to Salem on that day, and her passengers were sent back in coaches. The next day she made a trip to Hingham and returned, making the trip in two hours each way. The enterprise proved more than a total loss to her proprietors. There was a distrust in the public mind in relation to her, and many who cried out against her were thought to be influenced by the stage companies.

The Boston *Daily Advertiser*, July 4, 1817, announced, "We understand that the elegant steamboat 'Massachusetts' will be here this day at ten o'clock, and will take a few gentlemen and ladies for a few hours to sail about the islands in this harbor." This was beyond a doubt the first Fourth of July steamboat excursion in Boston harbor.

[4] Charles H. Dow's "History of Steam Navigation between New York and Providence, 1792–1877."

She seems to have been supplanted, in 1818, by the "Eagle," which filled her place as an excursion boat. The "Eagle" ran from Nantucket to New Bedford for six months the same year.

1818.—From a return made to the comptroller of New York, it appears that the tax upon steamboat passengers produced to that State during the years 1817 and 1818 was a net aggregate of $37,620.18. The gross amount of the tax for these two years was $41,440. All passengers for over one hundred miles paid a tax of $1 each, and for under distances over thirty miles, half the sum; under thirty miles, nothing. For every dollar collected by the State it was estimated that seven was received by the proprietors of the New York steamboats.

1818.—One hundred and thirty-nine years after the launch of the first vessel, the "Griffin," of sixty tons, by La Salle, August 7, 1679, upon the Niagara River, between the Falls and Lake Erie, steam navigation commenced on Lake Erie. The pioneer steamboat, called "Walk-in-the-Water," was launched at Black Rock on the 28th of May, 1818.

In the *Federal Gazette and Baltimore Daily Advertiser* of April 27, 1818, I find two advertisements of steamboats running to Philadelphia,—one, of the Union Line of Steamboats *via* Frenchtown and New Castle, advertised by William McDonald & Son to start from the lower end of Bowly's wharf every evening at five o'clock; the other, advertised by Briscoe & Partridge, leaving the same wharf at the same hour; "the passengers, traveling over a good turnpike road from Elkton to Wilmington, will then take steamboats, and arrive in Philadelphia in time for the boats which leave that place for New York."

CHAPTER III.—1819–1838.

The Savannah, the First Ocean Steamship, 1819.—David Napier's Enterprise, 1819–22.—First Steamboats on the Missouri, 1819.—The Robert Fulton Steamship between New Orleans and New York, 1819.—Walk-in-the-Water, First Steamboat on Lake Erie, 1819.—First Steamboat on Lake Michigan, 1827.—First Ramsgate Steamboat, 1820.—First Steam-Vessels in the Royal Navy, 1820–23.—French Officers sent to United States to inquire about Steam-Vessels, etc., 1820.—First Steamboat on the Indus, 1820.—First Sea-going Steamboat for Hull, England, 1821.—First Steamboat Excursion from New York to Providence, 1821.—First Steamboat Line between Providence and New York, 1822.—David Gordon's Patent for Boxing Paddle-Wheels, 1822.—Table of Comparative Voyages of Sailing- and Steam-Vessels, 1822.—Number of Steamboats on American Waters, 1823.—Captain de Lisle proposes Screws to be applied to French Ships of the Line, 1823.—Delangue, of Paris, patents a Screw, 1824.—Steamer Enterprise goes from London to Calcutta, 1825.—Jacob Perkins's Propeller, 1825.—Samuel Brown's Canal Towing Company's Propeller, 1825.—Steamboat Speed on the Hudson, 1826.—

Woodcroft's Screw, 1826.—Winter Steamboats between Philadelphia and New York, 1827.—The Atlas launched at Rotterdam, 1828.—The Swift, First Steamer in Turkey, 1828.—The Curaçoa, 1828.—The Steam-Brig New York, 1826.—Patten's Screw; Copley's Screw; Pettier's Screw, 1830.—First Steamboats on the Danube, 1830.—Temperance Resolutions of the Livingston Steam-Packet Company, 1829.—The Meteor, the First Ship of the Royal Navy to carry the Mails, 1830.—The Hugh Lindsay, First Steamer to navigate the Red Sea, 1830. Girard's Screw, 1831.—First Steamer to arrive at Chicago, 1831.—Woodcroft's Screw, 1832.—First Wrought-Iron Steamboat, 1832.—The Firebrand's Long Voyage, 1833.—First Vessel of the Royal Navy to West Indies, 1832.—Junius Smith, the Originator of Ocean Steam Navigation, 1832–38.—The Second Steamship to cross the Atlantic, 1832.—First Steamer on the Merrimac River, 1834.—Smith's Screw, 1835.—Fitzpatrick's, 1835.—French Steamboats, 1836.—First Steamer to China, 1832.—An American Ironclad, 1836.—Commodore Barron's Ram, 1836.—Steam Tow-Boats introduced on the Delaware, 1836.—Steam-Vessels of Great Britain, 1836–37.—The Francis B. Ogden, Ericsson's First Practical Screw Steamer, 1836.—The Enterprise, 1839.—The Robert F. Stockton Screw, 1838–39.—Crossing the Atlantic under Sail.—The Princeton, First Screw War Steamer.—Smith's Screw Steamer Archimedes, 1836–38.—The Rattler, First English Screw War Steamer, 1843.—Austrian, Russian, and Hungarian Steamers, 1837.—Dr. Lardner on Steam Navigation of the Atlantic, 1837.—Steam-Vessels of the United States, 1838.—The Germ of the United States Navy, 1837.

1819.—THE "SAVANNAH," THE FIRST OCEAN STEAMSHIP.

This vessel—pronounced a myth by Mr. Woodcroft in his work on "Steam Navigation," and of which the London *Illustrated Times* for January 16, 1858, says it "is forced into the belief was merely an after-thought of the Americans," claiming that the "Rob Roy," a British steam-packet, between Glasgow and Belfast, was the first sea-going steamer—it can be easily shown was no myth, but a sea-going steamer, which by the aid of sails and steam made the passage from New York to Liverpool in twenty-six days in 1819.

The "Savannah" was built at Corlear's Hook, New York, by Crocker & Fickett. She was three hundred and eighty tons burden, and was launched on the 22d of August, 1818, and built to ply between New York and Liverpool as a sailing-packet. About the time of her launch, Captain Moses Rogers, then of Savannah, Georgia, suggested to Messrs. Dunning, Scarborough, Sturges, Burroughs, Henry, McKinna, and others of that city, the idea of constructing a steamer for plying between Savannah and Liverpool. They accordingly purchased this ship, just launched at Corlear's Hook, and well adapted for the purpose, and named her the "Savannah." They allowed the rigging and other appurtenances for sailing to remain, and supplied her with steam-machinery, and *paddle-wheels*, the latter constructed to fold up like a fan and to be laid upon deck when not in use, her shaft having also a joint for that purpose. The wheel-house was made of canvas extended on an iron rim. She made a trial voyage to Savannah in April, 1819, and arrived there from New York in seven days, after a

boisterous passage, during which she had to take in her wheels several times and rely upon her sails.

She left New York under canvas, and arrived at Savannah early in May, 1819. President Monroe was in Charleston, South Carolina, and Mr. Scarborough directed her to go there and give the President an invitation to come to Savannah on the steamship. The President declined, as the people of Charleston did not wish him to leave their State in a Georgia conveyance, but said he would meet her at Savannah. Therefore she returned to Savannah, and a few days after the President arrived and came on board with his suite, accompanied by several naval officers and citizens. The vessel was controlled by steam, and proceeded upon an excursion down the river. The President dined on board, and expressed himself greatly pleased with the vessel, and told Mr. Scarborough that when he returned from her trip across the Atlantic to bring the vessel to Washington, for he thought no doubt the government would purchase her, and employ her as a cruiser on the coast of Cuba.

After her trial trip there was no doubt that the "Savannah" would successfully accomplish the object for which she was purchased, and she sailed from Savannah for Liverpool May 26, 1819. The New York papers of the 2d of June notice her having been spoken at sea, all well. The log-book of the "Pluto," which arrived at Baltimore from Bremen, contains the following passage:

"*June* 2, 1819.—Clear weather, smooth sea, latitude 42°, longitude 50°. Spoke and passed the elegant steamship eight days out from Savannah to Petersburg, by way of Liverpool. She passed us at the rate of *nine or ten knots*, and the captain informed us she worked remarkably well, and the greatest compliment we could bestow was to give her three cheers as the happiest effort of mechanical genius that ever appeared on the Western ocean."

Niles's *New York Register* for the 21st of August contains this paragraph, italicized, at the head of its column of foreign news: "*The steamship 'Savannah,' Captain Moses Rogers, the first that ever crossed the Atlantic, arrived at Liverpool in twenty-five days from Savannah, all well, to the great astonishment of the people at that place. She worked her engine eighteen days.*"

It is stated that "on the 'Savannah's' approach to Liverpool, with sails furled and American colors flying, the piers were thronged by thousands, who greeted her arrival with vociferous cheers, and before she anchored her decks were so crowded it was with the greatest difficulty the crew could move about in the performance of their duty."

The next record of her movements is that she sailed in August for St. Petersburg, passing Elsinore on the 13th, and that the British "wisely supposed her visit to be somehow connected with the ambitious views of the United States."

She returned to Savannah early in November, 1819, after a passage of fifty-three days from St. Petersburg, *via* Copenhagen and Arendal, in Norway, in the language of Captain Rogers, "with neither a screw, nor bolt, nor rope-yarn parted, though she encountered a heavy gale in the North Sea." She left Savannah for Washington on the 4th of November, and lost her boats and anchors off Cape Hatteras.

But for the war of 1812 the "Savannah" would have been anticipated in her ocean voyage by a larger and superior vessel, built by a company for the Russian government. This vessel, the "Emperor Alexander," was nearly ready for sea when her departure was prevented by the declaration of war in June, 1812. Under the name of the "Connecticut" she was known upon the waters of Long Island Sound, and later in her history was a weekly packet between Portland, Maine, and Boston, Massachusetts.[5]

If these statements do not satisfy the most doubting that the "Savannah" was no myth or an after-thought of the Americans, these extracts from a petition to Congress, in 1856, by Mrs. Taylor, the daughter of her constructor, fortified by the sworn testimony of Captain Rogers, must be conclusive.

Mrs. Taylor says, "Your petitioner is the only surviving child of the late William Scarborough, of Savannah, Georgia, who, being an energetic and enterprising man of great mechanical genius, caused to be constructed in the years 1818–19, with his own means, and those of every friend he could enlist in the effort, the first steamer that ever crossed the Atlantic, 'The Savannah,' of Savannah, Georgia, Captain Moses Rogers, of New London, Connecticut, commanding."

For the details of this voyage she refers to the sworn statement of Captain Steven Rogers, the sailing-master, "and prays that they will grant her some pecuniary acknowledgment," etc.

Captain Steven Rogers,[5] under date New London, Connecticut,

[5] Captain Steven Rogers, the sailing-master, died at New London, Connecticut, September, 1868, aged seventy-four years. The log-book of the "Savannah," containing the daily record of her memorable voyage, is in possession of his descendants.

This valuable relic is made up of ninety-six pages of coarse paper, twelve inches wide and nineteen and a half long, browned with age, and with edges ragged from much handling. Only fifty-two pages are written on, the rest are blank. It is unbound, but the sheets are sewed into an enveloping piece of sail-cloth, which is rudely hemmed at the upper and lower edges. This cloth cover bears the inscription, "Steamship 'Savannah's' Log-Book," printed in bold characters. The handwriting is that of Steven Rogers, the sailing-master. Every word in the closely-written pages is legible, the ink being still black; only a small portion of the entries have any present interest, the larger part being remarks on the weather, on the disposition of the ship's sails, and the results of the observations of latitude and longitude.

The caption of the first page is as follows:

"*A Journal of a Voyage from New York towards Savannah on steamboat 'Savannah;' Moses Rogers, Master.*"

May 2, 1856, swears that he is aged sixty-eight years; that he was the *sailing-master* of the steamship "Savannah" on her trial trip to Liver-

This is continued on four pages; the caption of the fifth is,—

"A Half-Hour Journal on board steamship 'Savannah,' Moses Rogers, Master."

And after a few pages this caption gives place to—

"A Journal of a Voyage from Savannah towards Liverpool on board steamship 'Savannah;' Moses Rogers, Master."

The caption afterwards changes several times, but the same formula is preserved.

The first entry in the log-book is—

Sunday, March 28, 1819.—These 24 hours begin with fresh breezes at N. W. At 10 A.M. got under way for Sea with the crew on board. At 1 P.M. the Pilot left the Ship off Sandy hook light."

After this entry the page is ruled on the left side into six narrow columns, headed respectively, "H, K, HK [hours, knots, half-knots], Course, Winds, LW [lee-way];" and then a longer space, headed, "Remarks on board," with the appropriate date.

The second entry is as follows:

"Remarks on board Monday, March 29, 1819. The 24 hours begin with fresh breezes and clear. At 4 P.M. the Highlands of Neversink bore N. b. W. 6 Leagues distant from which I take my departure. At 10 P.M. took in Topgallant Sails. At 6 A.M. Set Topgallant Sails. At 8 A.M. Tacked Ship to the Westward. Saw a brig and Schooner Steering to the Westward. At 11 A.M. took in the Mizzen and Fore Topgallant Sails. At 11 A.M. got the Steam up and it coming on to blow fresh we took the Wheels in on deck in 30 minutes. At meridian fresh breezes and Cloudy. Lat. by Obs. 39° 19′."

This is a fair sample of the daily records, extending over a period of nine months.

The statement, "we took the wheels in on deck in thirty minutes," refers to the fact that this steamer was so constructed that, in case of boisterous weather, her paddle-wheels could be brought on deck.

Land was sighted on June 16, being the coast of Ireland, and on the 17th the "Savannah" "was boarded by the King's Cutter 'Kite,' Lieutenant John Bowie."

The log-book here, as elsewhere, is sternly brief. Fortunately, we have in Steven Rogers's own words a fuller account of the amusing circumstances connected with this boarding of the "Savannah" by the king's cutter. In a commmunication to the New London (Connecticut) *Gazette* he said, "She [the steamer] was seen from the telegraph-station at Cape Clear, on the southern coast of Ireland, and reported as a ship on fire. The admiral, who lay in the Cove of Cork, dispatched one of the king's cutters to her relief. But great was their wonder at their inability, with all sail in a fast vessel, to come up with a ship under bare poles. After several shots were fired from the cutter, the engine was stopped, and the surprise of her crew at the mistake they had made, as well as their curiosity to see the singular Yankee craft, can be easily imagined. They asked permission to go on board, and were much gratified by the inspection of this naval novelty."

Two days later (June 20) they "shipped the wheels, furled the sails, and ran into the River Mersey, and at 6 P.M. come to anchor off Liverpool with the small bower anchor."

The London *Times* of June 21, 1819, has the following paragraph, credited to *Marwade's Commercial Report* for that week:

"Among the arrivals yesterday at this port we were particularly gratified and astonished by the novel sight of a fine steamship, which came round at 7½ P.M. without the assistance of a single sheet, in a style which displayed the power and advantage of the application of steam to vessels of the largest size, being *three hundred and fifty tons* burden. She is called the 'Savannah,' Captain Rogers, and

pool, Copenhagen, St. Petersburg, etc. "Said steamship was built at the city of New York, in the year 1818, the builders being Fickett & Crocker. She was designed for a Havre packet, and was purchased by William Scarborough, of Savannah, and was named at his suggestion 'The Savannah,' he having told me that in his opinion the ocean would be navigated by steam, and he intended his own State and city should have the credit of sending the first steamer across the Atlantic. Her castings were made in New York, and her boilers at Elizabethtown, New Jersey, by Daniel Dodge. She left New York under canvas, and arrived at Savannah in the early part of May, 1819. President Monroe was then in Charleston, South Carolina, and Mr. Scarborough directed us to go there and give the President an invitation to come to Savannah on the steamship. The President declined because the people of Charleston did not wish him to leave their State in a Georgia conveyance, but said that he would visit us at Savannah. So we returned. A few days after we got back the President arrived, and came on board the vessel with his suite and several naval officers and citizens. The vessel was navigated by steam, and we proceeded down the river on an excursion. The President dined on board, and expressed himself greatly pleased with the vessel, and told Mr. Scarborough that when she came back from her trip across the Atlantic, to bring the vessel around to Washington, for he thought there was no doubt the government would purchase her, and employ her as a cruiser upon the coast of Cuba.

"We sailed from Savannah for Liverpool on the 26th of May, 1819. Moses Rogers, my brother-in-law, was master and engineer. I was sailing-master, and Mr. Blackman was third officer. We made the port of Liverpool in twenty-two days after leaving Savannah, fourteen of the twenty-two under steam. The only reason why the whole voyage was not performed by steam was the fear of the fuel giving out. Off Cape Clear, the admiral at Cork dispatched a ship to our relief, supposing we were *on fire*. At Liverpool we caused a great deal of excitement, and suspicion of having some design to release Napoleon from St. Helena. From Liverpool we proceeded to Copenhagen, and from thence to Stockholm. At both places the 'Savannah' excited great

sailed from Savannah (Georgia, United States) the 26th of May, and arrived in the Channel five days since. During her passage she worked the engine eighteen days. Her model is beautiful, and the accommodations for passengers elegant and complete. She is THE FIRST SHIP on this construction that has undertaken a *voyage across the Atlantic.*"

The *Times* of June 30, 1819, says, "The 'Savannah' steam-vessel recently arrived at Liverpool *from America*—the *first vessel* of the kind that *ever crossed the Atlantic*—WAS CHASED A WHOLE DAY off the coast of Ireland by the 'Kite' revenue cruiser, on the Cork Station, which mistook her for a ship on fire."

Lloyd's List reports the arrival of the "Savannah" at Liverpool on the 20th of June, 1819, bound to St. Petersburg; and in Gore's "Annals of Liverpool" this American steamer's arrival is recorded among "remarkable events."

curiosity; at the latter place she was visited by the royal family, our Minister, Mr. Hughes, and Lord Lyndoch. Lord L. went with us to St. Petersburg. On the passage he desired us to bring the vessel from steam to canvas. He held his watch and noted the time, fifteen minutes. He was so delighted that he exclaimed, 'I blame no man born in the United States for being proud of his country; and were I a young man I'd go there myself.' The Emperor of Russia came on board at Cronstadt, and was much pleased with the vessel, and presented Captain Rogers with two iron chairs (one of which is now in the garden of Mr. Dunning at Savannah)."

Steven Rogers then states that he has in his possession a gold snuff-box presented to him by Lord Lyndoch, upon which is the following inscription:

"Presented by Sir Thomas Gresham, Lord Lyndoch, to Steven Rogers, sailing-master of the steamship 'Savannah,' at St. Petersburg, Oct. 10, 1819."

He adds, "We sailed from St. Petersburg to Arendal in Norway, and from thence to Savannah, in twenty-five days, steaming on the passage *nineteen days*. We went from Savannah to Washington at the suggestion of President Monroe, but the government did not buy her. She was there sold at auction and converted into a packet."

Captain Rogers says that Scarborough ruined himself by her, and died poor. While at St. Petersburg the "Savannah" was anchored opposite and six miles from the city. After being used for a time as a sailing-packet between New York and Savannah, the "Savannah" went ashore on Long Island and was broken up.

These notices of the "Savannah" are from the newspapers of the day:

"By an advertisement in this day's paper it will be seen that the new and elegant steamship 'Savannah' is to leave her harbor to-morrow. Who would have had the courage twenty years ago to hazard a prediction that in the year 1819 a ship of three hundred tons burden would be built in the port of New York to navigate the Atlantic propelled by steam? Such, however, is the fact. With admiring hundreds have we repeatedly viewed this prodigy, and can also bear witness to the wonderful celerity with which she is moved through the water. On Monday last a trial was made of her speed, and although there was at no time more than *an inch* of steam upon her, and for the greater part not *half an inch*, with a strong wind and tide ahead, she went within a mile of the anchoring ground at Staten Island, and returned to Fly-Market wharf in one hour and fifty minutes. When it is considered that she is calculated to bear twenty inches of steam, and that her machinery is entirely new, it must be evident that she will with ease pass any of the steamboats upon our rivers. Her cabin is finished in an elegant style, and is fitted up in the most tasty manner.

There are thirty-two berths, all of which are state-rooms. The cabin for ladies is entirely distinct from that intended for gentlemen, and is admirably calculated to afford that perfect retirement which is so rarely found on board of passenger ships."[6]

"The elegant steamship 'Savannah' arrived here about five o'clock yesterday evening. The bank of the river was lined by a large concourse of citizens, who saluted her with shouts during her progress before the city. She was also saluted by a discharge from the revenue cutter 'Dallas.' Her appearance inspires instant confidence in her security. It is evident that her wheels can be unshipped in a few minutes, so as to place her precisely in the condition of any other vessel, in case of a storm and rough sea. Our city will be indebted to the enterprise of her owners for the honor of first crossing the Atlantic Ocean in a vessel propelled by steam."[7]

"We are requested to state that the steamship 'Savannah,' Captain Rogers, will without fail proceed to Liverpool direct to-morrow, 20th instant. Passengers, if any offer, can be well accommodated."[8]

"Captain Livingston, of the schooner 'Contract,' who arrived at Newburyport on the 5th instant, sighted on the 29th of May, latitude 27.30, longitude 70, a vessel ahead to eastward, from which he saw volumes of smoke issuing. Judging it to be a vessel on fire, stood for her, in order to afford relief; 'but' (observes Captain Livingston) 'found she went faster with fire and smoke than we possibly could with all sail set. It was then we discovered that what we supposed a vessel on fire was nothing less than a steamboat crossing the Western Ocean, laying her course, as we judge, for Europe; a proud monument of Yankee skill and enterprise. Success to her.'"[9]

"*Norfolk, August* 10.— . . . I have received no shipping list by this arrival, but an article of great importance in the steam world (if I may use the expression) is contained in the Cork paper of the 19th of June. It is no less than the arrival at Kinsale, in twenty-one days, of the steamship 'Savannah,' from Savannah, laden with cotton and passengers. She put in for supplies, would remain a day or two, and then proceed for Liverpool. Previous to her putting in she was chased by a cutter under the impression that she was a ship on fire. No further particulars are stated."[10]

[6] New York *Mercantile Advertiser*, March 27, 1819.
[7] Savannah *Georgian*, Wednesday, April 7, 1819.
[8] *Georgian*, Wednesday, May 19, 1819.
[9] *Georgian*, Thursday, June 24, 1819.
[10] Charlotte City *Gazette*.

GEORGE H. PREBLE,
Rear-Admiral U.S.N.

(To be continued.)

THE LANDING AT VERA CRUZ.

On this, the anniversary, I propose to begin to tell the story of the landing of General Scott's army at Vera Cruz, Mexico, on the 9th of March, 1847, *forty-seven years* ago to day. Before dealing with the landing of the army on the day mentioned, it seems necessary, and may be interesting, to give an account of the movements of troops and relate occurrences which took place some months before the day in question.

Of course, what I propose to tell about now happened many years ago, and I must be excused for any little unimportant mistakes I may make in names, dates, etc. However, the facts which I will give, from memory, and the records, are so interesting, no matter how lamely detailed, that I hardly think my readers will be inclined to hunt out the little rough places in the thread of the story.

When General Scott reached the mouth of the Rio Grande, or "Brazos," from the north, on the 29th of December, 1846, the battle of Monterey had been fought and won, and General Taylor, with Twiggs's division and Quitman's brigade, was moving in the direction of Victoria and Tampico: troops under General Patterson were also moving at the same time, from Matamoras, for these points. Generals Taylor and Patterson finally met at Victoria between the 4th and 24th of January, 1847. Tampico had been captured by the navy on November 10, 1846, and troops to garrison it were soon after sent from the Rio Grande by General Patterson.

It is not to the purpose, and besides would make the story too long, to tell of General Taylor's countermarch with Twiggs's division to Monterey and Saltillo, when first *en route* to Victoria. The occasion was a supposed threatened attack by Santa Anna with a large army on General Worth's command at Saltillo. The rumor was false.

While at Victoria, General Taylor first heard of the withdrawal of his best troops by General Scott for the attack on Vera Cruz. Orders were given for Generals Twiggs, Patterson, and Quitman, with their commands, to continue the march to Tampico, and from that place embark, when the ships arrived, and sail for Lobos Island (over a hundred miles south, towards Vera Cruz), anchor there, and await further orders from General Scott. General Taylor, with a small escort, returned to Monterey.

In the absence of General Taylor from Monterey, General William O. Butler, by order of General Scott, put General Worth's division and other troops *en route* for the mouth of the Rio Grande, from which point they were to be placed on transports and were also to sail for Lobos Island and receive further orders from General Scott. General Wool's column (which had marched from San Antonio, Texas, and had been intended to operate against Chihuahua), when the attack from Santa Anna was anticipated, was ordered from Parris, and joined the troops in the vicinity of Saltillo (one hundred and fifteen miles away) and afterwards played a very conspicuous part in the battle of Buena Vista.

After many vexatious delays and disappointments, in waiting for transports, troops, munitions of war, etc., General Scott finally gave the signal, on the 2d of March, to set sail from Lobos Island for Anton Lizardo, the new rendezvous, eighteen or twenty miles south of Vera Cruz. The steamers of the expedition reached this place the next day, but the sail-vessels not for several days after.

On the 7th of March, General Scott, with Captain Robert E. Lee and other members of his staff, accompanied by Commodore D. Conner and staff, made a joint reconnoissance (in the steamer "Petrita") of the water front of Vera Cruz, to select the most suitable place to land the army. The point selected was the beach just west of the island of Sacrificios, and a little out of range of the guns of the city and the castle of San Juan de Ulloa. The castle was on a coral island a quarter of a mile from the city.

General Scott, before leaving the north, had ordered quite a number of surf-boats to be built, put on transports, and shipped south, for the purpose of transferring the troops from the transports to the shore at Vera Cruz. These surf-boats, sixty-seven in number, were launched while at the anchorage at Anton Lizardo, then numbered, crews of sailors selected for each boat, and navy officers detailed to take charge and direct their movements, and in many cases to steer them.

The place of disembarkation being fixed, the 9th was the day appointed for this important movement. And by daylight on that morning the transfer of the troops from the transports to the war-vessels began, and by eleven o'clock it was completed, and a few minutes after the fleet got under way with its load of soldiers, followed by a few transports with troops which could not be provided for on the men-of-war. The frigate "Raritan" and others had on board as many as two thousand soldiers, and the other vessels numbers in proportion to their size. These last facts I learned from Commodore Conner's official report, dated on board his ship, March 10, 1847. The occasion of the transfer of the troops to the navy was to prevent crowding at the place of landing, between the island of Sacrificios and the beach.

The eighteen miles' sail between Anton Lizardo and the island of Sacrificios (the new anchorage and landing-place) occupied about three

hours,—so Commodore Conner says,—and when arriving each ship anchored in its allotted space without mistake or the slightest confusion.

Now, having reached this point in my story, or rather the beginning of what I started out to tell, I will after this give an account of just what happened on "the day we celebrate," a part of which I saw myself, being the newly-fledged first sergeant of Company D, Regiment of Mounted Riflemen, and one of the landing-party. A glorious regiment, and a dashing, rollicking, brave company.

The moment after the vessels came to anchor the loading of the surf-boats began, each boat holding from seventy-five to eighty men, with their equipments. While the troops were getting aboard the surf-boats Commodore Conner directed the small steamers "Spitfire" and "Vixen" and the five gunboats to form in line parallel (on the right and left flank) and as close as possible to the beach, and within grape-shot range of the sand-hills, to protect the landing of the troops. As fast as a surf-boat was loaded it took a position in line with others, between the ships and gunboats.

I wish I could make my readers see the situation as it was, or even as I remember it. If we had had then one of those "*snap-shot*" things which the girls these days carry to "bring down" handsome young fellows as they pass unawares to and fro, what a picture we could have left to our children and grandchildren! But as we had not, I will have to trust to some extent to the reader's imagination to help me out.

The afternoon was beautiful and bright, and there was hardly a ripple on the water. The ships of war and transports were anchored in an irregular line between the island of Sacrificios and the landing-place, and the gunboats and two small steamers in line nearer the shore, with the *sixty-seven* surf-boats forming a semicircular line (to conform to the shape of the beach) between the ships and gunboats. The city, with its walls and forts, shining domes and spires, and the castle of San Juan de Ulloa, was to our right. The foreign ships in the harbor, near the city and castle, were covered with men from decks to sky-sail yards, and intensely watching, as if for the word "*go!*"

The navy officers in charge of the surf-boats with their loads of *five thousand* quiet but impatient soldiers now only waited for the signal, and when it came every oar struck the water almost at the same moment, and General Worth's veteran brigade of regulars moved rapidly for the shore. As soon as the keels of the boats struck the sand every man, without orders, jumped overboard and quickly waded ashore, and at once formed some sort of a line, and was ready for anything that might require his efficiency and courage; but there was no opposition by the Mexicans to the landing.

The boats at once returned to the ships, received and put ashore General Patterson's division of volunteers, in about the same time and manner as the brigade of General Worth. And then General Twiggs's

brigade of regulars (troops that afterwards became so celebrated as a division at Cerro Gordo) followed, and by half-past ten o'clock at night the army of between twelve and thirteen thousand men was ashore, without the loss of a man from any cause. And such an army! it might have been annihilated but could not be conquered.

During the day, before the landing began, whenever the propeller "Massachusetts," with General Scott on board, made her appearance a shout went up from the men of the army, which meant confidence in their leader; and from the very first there seemed to be a mutual understanding and trust between them, that grew as the campaign progressed. They appeared to know each other at first sight. It is probable, too, that many of the men had heard of the hero of Queenstown, Chippewa, Niagara, and Lundy's Lane, and wished to do him honor for the glory he had won for his country so many years before. And what a superb specimen of a soldier he looked and was!—six feet four inches high and large in proportion, was within a few months of sixty-one years of age, and had been thirty-three years a general officer. He was a perfect picture of robust health.

But I am making the story too long, and will speedily bring this account of the landing of our army at Vera Cruz to a close. The investment of the city began early on the morning of the 10th, and was completed by the afternoon of the 12th; General Twiggs's brigade having marched entirely around the city, and had been firmly established on the beach at the village of Vergara, on the road leading from Vera Cruz to Jalapa and the city of Mexico, and thus completing the circuit and the investment of the city of Vera Cruz. From the day of landing on the 9th to the afternoon of the 12th, when General Twiggs's command arrived at Vergara, there was very little or no actual fighting by any one of the columns,—only a few skirmishes which hardly caused a moment's detention. The slight attack at the landing, about midnight on the 9th, amounted to but little, and only served to "warm the collar" of the new troops. But later, during the investment, there were several very lively affairs "outside of the lines." One of which was at Puenta del Media, on the 24th of March, between the Regiment of Mounted Riflemen, under Colonel Persifor F. Smith, and a force of Mexicans, who were quickly driven from their chosen position with some loss in killed and wounded; the regiment had four or five men wounded. The other, and more serious affair, was at Medelin, on the 25th of March, between Colonel W. S. Harney, commanding Second Dragoons, and a large party of Mexicans. Colonel Harney was assisted by Lieutenant Judd, Third Artillery, with two guns, and also by some troops of the Second Tennessee Volunteers. This was quite a sharp fight, lasting some hours, resulting in the defeat and flight of the Mexicans, and quite a number killed and wounded on each side. There were several hand-to-hand encounters.

I will mention just here a fact that seems to have of late years been lost sight of, and that is, nearly all the men who became prominent and attained high rank during the war of the Rebellion (on each side of the question) landed with General Scott's army at Vera Cruz on the 9th of March, 1847. There was Captain R. E. Lee, Engineers (I name them according to their rank at the time), Second Lieutenant Ulysses S. Grant, Fourth Infantry, First Lieutenant James Longstreet, Eighth Infantry, Major E. V. Sumner, Second Dragoons, Second Lieutenant George B. McClellan, Engineers, Second Lieutenant Fitz-John Porter, Fourth Artillery, First Lieutenant P. G. T. Beauregard, Engineers, Second Lieutenant Winfield S. Hancock, Sixth Infantry, First Lieutenant John Sedgwick, Second Artillery, Second Lieutenant Thomas J. Jackson (Stonewall), First Artillery, Captain Philip Kearny, First Dragoons, First Lieutenant Earl Van Dorn, Seventh Infantry, and many others who are well known. Captain Bragg, First Lieutenant George H. Thomas, Second Lieutenants W. B. Franklin, John Pope, and D. N. Couch, were on General Taylor's line, and each had, only two weeks before, won a *brevet* in the battle of Buena Vista.

Now, right here I would like to "stick a pin." It has become the fashion in these days, when speaking of the great battles of the past, of big guns, high explosives, smokeless powder, ballistics, etc., to mention the Mexican War as a "skirmish," "picket fighting," etc. Well, it always "riles" me to hear it, but I am mollified when I think of the old story of the man who was kicked by the jackass and was not offended, because he "considered the source," etc., for such speeches generally come from the *embryo* (in their own estimation) Napoleons of the service. No one ever heard one of those whose names I have just mentioned speak except in glowing terms of the Mexican War and the heroic deeds done by our little army.

If these scoffers and detractors could have stood in line on the 23d of February, 1847, at Buena Vista, with the volunteers from Kentucky, Mississippi, Illinois, Arkansas, and Texas, or with the brave O'Brien, with those two now celebrated guns, they would have thought it a pretty *lively skirmish*. And their conversion to the fact that they were *really* in a *war* would have been complete could they have been with the Rifles, the Seventh and Second Infantry, or the First and Fourth Artillery, when they made the dash for the top of the hill of Cerro Gordo, on the 18th of April. If they had not by that time experienced a "change of heart," they might have taken a turn with the storming-party at Contreras, on the morning of the 20th of August, or kept the step with Worth's division at Molino del Rey, on the 8th of September, or else climbed the hill of Chapultepec, under fire, on the morning of the 13th of September, 1847. If they, these detractors and *unhatched* great generals of the future, had been at any one of the places I have mentioned, I feel satisfied he would have been as badly scared as I

was, and the thought might have gone through his mind, as it did mine, that "these Mexicans may be a cowardly set of fellows, but it seems to take them *a long time* to begin the movement to the rear to-day." The trouble for the Mexicans was that they had an army in front of them that never dreamed of defeat. The question was, in the minds of our men, "How long will it take to do it *this time?* and *who* will be there to join in the hurrahs for another victory? But I have wandered from the landing of our army at Vera Cruz, and started out as if to write a history of the entire war, but I will speedily close.

From the surrender of the city of Vera Cruz and the castle of San Juan de Ulloa, on the 29th of March, to the capture of the city of Mexico, on the 13th of September, 1847, was the beginning and end of a campaign unsurpassed for brilliancy, and bravery, and skill of the troops engaged. And notwithstanding, and in spite of, the machinations of the politicians of both parties, the war was brought to a triumphant close. The campaign was watched with interest and admiration by prominent army officers of Europe, some of whom had contended successfully with the great Napoleon.

The results of the war were California, Arizona, and New Mexico, and it taught the world that we were a fighting nation, and it probably saved West Point and enabled General Scott to send from the city of Mexico as tribute to Washington *one hundred and eighty thousand dollars* as "a basis for an army asylum" for disabled soldiers. And, by the by, this army asylum for regular soldiers has been built with the start of the one hundred and eighty thousand dollars, and kept up by the monthly contributions and court-martial fines entirely by the enlisted men of the regular army. A small appropriation may have been made during the war of the Rebellion for the purchase of additional land, which was, however, more to benefit the general public than the old soldiers. The grounds of the "Soldiers' Home," at Washington, make a pleasant driving park for our worthy, as well as unworthy, legislators, and also for the citizens of Washington.

But we old soldiers don't mind the public driving about *our grounds*, if they don't break the branches of the trees, don't pull the flowers, and will "keep off the grass," and don't try to take away the *eight dollars a month pension* when we are too old or too sick to go to the polls to vote.

And now, my dear old comrades of the Mexican War, a few parting words to you, and I am done. May you live long and be happy, and when the *last call* comes, I trust God will give us courage to join without fear the silent bivouac; and when we meet "on the other side," may it be said to us, "Well done, thou good and faithful servant."

W. B. LANE,
Brevet Lieutenant-Colonel U.S.A.

OLD POINT, VIRGINIA, March, 1894.

A SUMMER AMONG THE SEALS.

(Continued from page 357.)

THROUGH the light mist showed a stretch of broken, irregular coast, rising from the water churning among the rocks on the sea-face, and extending upward and backward, sometimes by gentle inclines of sand and gravel, in other places by abrupt, rocky terraces, and again by reaches of heaped volcanic detritus and breccia, until the wilderness of rock, boulder, and cliff blended with the grassy slopes of the distant hills. As in all this region, the evidences of violent subterranean action were everywhere about, for countless ages the softening influences of time and the elements had been busy toning down tints and giving roundness to the harder and more rugged outlines. Such was the groundwork; and on this margin of the sea, varying in width from a hundred feet to five hundred yards, was more panting, squalling, fighting life than we had ever seen before. There were the seals, standing out from the black background in great white, yellow, and dun-colored patches of a thousand square yards, scattered in places, in others so thickly bunched that one might walk from body to body for a hundred feet without once touching rock. There was a suggestion of unrest, of ceaseless, shifting activity and motion everywhere. Animals squabbled, quarreled, struggled, and fought; scrambled about the rocks in countless numbers, or moved in long processions to and from the breakers; while the water itself was a sea of tossing heads, cigar-shaped bodies, and waving flippers, diminishing in the distance and blending with the mist. A post-analysis of one's impressions at such a time is difficult. Only, to stand in the presence of that great, seething, palpitating mass, limited only by the fog through which it might extend indefinitely; to sniff the searching animal odor and fetid breath that brought one so near and connected one so intimately with all that life; to take the vast, dull roar, as of multitudes gone mad, and differentiate it into a net-work of cries expressing the whole gamut of animal emotion, from the involuntary expression of blind ecstasy, the wail of pain, the bellow of rage, the trumpet of victory, to the anxious call of maternity, the feeling cry of hunger, the whimper of discomfort, or the low growl of discontent, for all were there with their

infinite variations; was to feel in their fullness the influences of the time, the place, and the strange new surroundings; to blot out companions, forget the progressive nineteenth century, the more polished struggles of the world, and retrograde a few thousand years to the time when primitive man hustled for existence guided mostly by instinct, much after the manner of these poor animals, only conducting his operations with a bit more method, perhaps, because of the "Divine Spark" which had illuminated his understanding and had left theirs in darkness.

The voice of Mr. Peters began to mingle with the din about just in time to prevent further damaging reflections on the unhappy condition of his simian ancestor. He was calling attention to the animated appearance of the water. No animal appears to derive more fluid enjoyment from a surf bath than the seals. Though originally a land animal, the sea is now its home and its proper element. On the present occasion every square yard or so of surface apparently had its seal, busy showing off and doing the most remarkable things. Hundreds were playing in the breakers, diving with a powerful upward heave of the flippers under the crests of incoming rollers, thus affording vanishing effects of long, cylindrical bodies, abbreviated tails, and trailing rear flippers like steering oars. Then the squirrel-like head, carried proudly by the long, serpentine neck, would shoot out on the other side; a quick, comprehensive glance around, a downward duck, and out of sight again. Others, out in the smoother water, were tied up in hard knots for a good scratch,—trying to reach an unattainable spot on the head with a hind flipper, set too far aft for the purpose. Others rolled over and over in the water in a sort of slow, aqueous waltz. The time was bad, however; no band, only the music of the surf. Others again, stretched out luxuriously on the water half asleep, waved a hind flipper as a sort of marine fan, though it is very hard to say what any one would want a fan for in bathing. Then in the water among the rocks the process of debarkation went busily on. Each incoming wave brought its freight of beautiful, glistening bodies, and threw them squirming against the sharp corners. But these animals did not appear to mind it. Their soft, yielding bodies can be knocked about to almost any extent without suffering injury.

As I said before, only the females and young males go into the water during the breeding season. The bulls that are householders and have families to look after do not leave their eight or ten square feet of rock for any purpose, fasting sometimes for three or four months, and supporting life on the adipose tissue they accumulate during the winter and carry with them when they "haul out" on the rocks, as it is technically called. This is apparently a most incredible statement; but it rests upon the authority of intelligent observers who have been domiciled here for years. When these poor bulls at the end of the season crawl painfully back into the water, they are mere skeletons covered with

corrugated folds of skin, totally unlike the big, slick, well-conditioned brutes that arrived at the island in May.

After taking in the general effect from our hill-top, we descended and began to particularize a little. It was just here that I had my first experience with a bull seal,—with any seal, in fact. Before us, on a flat rock, was a big, black brute, lazily stretched out, and paying much less attention to us than others farther away that had families. This seemed all right. The books all say that a bull seal takes little active interest in life when practicing celibacy, and at such times can be approached with impunity. But people should not, when suddenly placed in what are novel situations to them, be guided entirely by precedent as told in books. They should exercise that common horse-sense which they would blame others for not exercising if similarly circumstanced. The bull under inspection was such a great, stalwart, fine-looking fellow, that we wondered why he appeared so down on his luck; why he did not go to work and carve a family out of some of the large ones about. One said he had the drooping appearance of a fellow crossed in love; another, a slightly cynical bachelor of forty-odd, that he had lived long enough to see there was nothing in it but trouble, worry, and mortification of the spirit. Mr. Peters here remarked slightingly that that bull evidently had no spirit; he had a good mind to go up and pull his ear. He said anybody could do that to a bull without a family. Then, looking around, he offered to give me the bull if I wanted him, and rather suggested I should go up and inspect my property. I approached, concluded his coat might make a good door-mat; but something warned me not to step on him just then. When within ten feet I stopped, for the bull began to show signs of life. He rose up slowly, and we eyed each other. He evidently felt encouraged, for about that time everything in the universe seemed to break up.

When I stopped, seventy yards up the rocks, minus both hat and presence of mind, and looked back, four idiots were doubled up like jack-knives over something, and another hung helplessly on a rock, while my bull was slowly retiring to his corner, hitching up his shoulders in a decidedly "What d'ye soy?" manner. By the time I reached my hat the acute stages of mental paralysis had given place to feeble cerebral action, and I was able in a way to connect events with my rapid but involuntary retreat. It was all clear up to the ten-foot danger radius; then there appeared to have been considerable confused though spirited action. I remembered a gurgling roar that shook things; something between the opening notes of a calliope and the exhaust of a locomotive when the drivers slip; then a total eclipse of the rocks, rookery, horizon, and fog-bank as the visual angle subtended by six hundred pounds of bull seal increased as he got way on and lunged to the front; then a frantic effort to leave on my part; then a slip on the rock, a scramble to get up, and a terrified glance

behind showing the air full of fierce eyes, bad breath, long, well-kept teeth, working flippers, and seal that looked business all over. Mr. Peters said it was anybody's race for forty feet, then the human began to draw away.

Whatever the tendency of soaring people may be to growl at the peculiar limitations of man spiritually, there are few indeed who, at one time or another, haven't had reason to congratulate themselves that the "Regulating Power" has ordained things with a view to their earthly well-being and prosperity. Once in India several of us had the pleasure—which turned out to be questionable—of inspecting at close range two tigers fresh from the jungle. They were beautiful, tawny brutes, big enough to carry off an ox. Two weeks before both were in a position to appropriate all the live-stock near the jungle which they ranged; but man dug a pit, and when we saw them they were uneasy captives, swinging pendulously back and forth, forth and back, in two large cages placed about eight feet apart. We filed between the cages, admired their construction, felt glad they appeared up to their work, and then began thinking how nice and safe and satisfactory everything was, even with death in two striped forms close aboard,—not five feet away. Just then the bigger tiger seemed to connect us in some way with his pit experience, for he stopped swinging, and without any warning a roaring, yellow streak came through the air, bowed out a bar with a lightning-like, thundering swipe of one powerful paw, while the other reached through about two feet with claws sticking out all over it looking as big as powder-horns. That paw fell short, of course, but flesh and blood couldn't stand the strain. We left precipitately. Now, it is not unpleasant to reflect that man could so fashion a cage that it refused to dump seven hundred and odd pounds of live tiger into that narrow aisle,—there never would have been room for all of us, —and that the Divine Architect built the bull seal on lines that make him a good sprinter for only forty feet. When that distance is done he has to stop and pant, and take it out in wishing he just had that two-legged thing, getting smaller in the distance, in the water.

After my adventure we passed on and stopped near a large family with several yards of clear rock all around. It was a united household in more senses than one. There were thirty-one wives in it, beautiful, mild-featured creatures, with eyes so large, liquid, and tender that no one can blame the bull seal for struggling to the death for one loving glance. The female seal is such a lovely little thing, and there is something so sweet, wistful, and generally taking about her nice muzzle, that it is a pleasure to look at her indefinitely. Her every movement in the water is grace itself; and even on land, as she scrambles out of the breakers and over the rocks with every curve of her *svelte* body showing through her sleek, wet skin with the accuracy as to detail of a Coney Island bathing dress, one is apt to overlook the fact that her progress is a trifle

slow and labored,—a good, strong pull forward with the front flippers, then a feeble, spasmodic twitch of the rear ones, that are of no use on land except as fans when the weather is warm. She has a graceful, well-proportioned head; the lower part of her face and chin are prominent, of course, like a Newfoundland dog's, but her eyes are big, dark purple, benignant, and dreamy; her teeth are good, too.

The members of this family were at first not disturbed by our approach, and we had ample time to look them over. A few were moving about, but the majority occupied all sorts of curious positions on the rocks. Some were coiled up like kittens, heads tucked under flippers out of sight; others sat bolt upright, eyes closed and nose pointed to the zenith, asleep, as a nod, hitch, and sudden catch every now and then, like an old man napping, testified; still others, packed close together, slept with heads affectionately pillowed on each other's soft bodies, apparently—mark that, "apparently"—with none of the petty jealousies and small disagreements that are supposed to make the life of the average harem rather trying to the tempers of its inmates.

The proprietor of all this bunched domestic felicity stretched a great hairy body over seven feet of rock, also asleep, seemingly unmindful of his blessings and the necessity of keeping a weather eye upon them. Perhaps he reposed enough trust and confidence in his family to indulge in cat-naps. But he was a light sleeper. When we appeared from behind the rock that had partially screened us, he was awake all over and ready for battle. As he arose, the females also started up. One gave a peculiar warning cry, and it went through that family like an electric shock. They raised their heads in a terrified way, huddled close together for mutual support and protection; then wheeling about, the ones lower down started for the sea on a dead lope, squalling like furies. I may say here that the voice of the female seal is not up to her other attractions. When she opens her mouth—like a good many people—she gives herself dead away. However, these startled young persons never reached the water. The old Turk in charge grasped the situation like lightning, gave vent to that full-chested steam blast and muffled roar, now strangely familiar to me, and with one lumbering bound put himself between his family and the sea. Then he gave an exhibition of executive ability of the highest order: snapped one minute at a timorous female bent on flight; shouldered another, evidently not a prime favorite, bodily into the middle of the pack; multiplied himself several times by galloping violently about his charges; stopped just long enough to tell one whose feelings he was tender of to cheer up and please not mind; and another, whose feelings he didn't regard in the least, to get back and keep quiet, or he'd shake the life out of her; and altogether got things quieted down in a marvelously short time and in a way that told of much experience

in his business. I know several of the married men present regarded with a sort of wondering envy these manifestations of his efficiency as a home despot and the way he dominated his family and made his authority felt and respected. When the bull thought they would stand fire, he placed himself between his home and the intruders, every hair he had on end with rage, and a battery of fine, large teeth unmasked straight to the front. Mr. Peters said he would stay right there and die in his tracks sooner than desert his harem. He looked it. A sane man provided with a gatling-gun, and from the inside of a perambulating boiler, might attempt to prove it, but not otherwise.

While we were directing our whole attention to this family the entire rookery had waked up to the fact that something was wrong. The note of warning had been taken up and passed along until the uproar was something terrible; and each family of timorous females bunched together, with heads erect, fairly overshadowed by the big, black masses of the bulls, mad all over, and ready to annihilate all disturbers of their peace. But seeing that we stood perfectly still until the uproar subsided, vigilance gradually relaxed, confidence was restored, and we proceeded, only occasionally warned by the hoarse, guttural chuckle of some irate bull that we were getting too near his treasures.

There were evidences all about of the length of time the island must have been a breeding-place for seals. The hard basaltic rocks and boulders, surely hard enough to turn the edge of any instrument, were worn down round and smooth by what must have been the rubbing of millions of their soft, yielding bodies. In one case, putting a rule on either side of a projecting edge and comparing it with the contour of the same rock a little higher up, it was evident that at least five inches of the hard material had been worn away. This was fully two hundred yards from the sea; and, taken in conjunction with similar indications of attrition all about, it argues tremendous periods of time and almost inconceivable numbers of these animals. There were whole square miles of such ground, showing evidences of having been, in past times, as closely packed as the rocks before us; but they are now totally abandoned, and have been for many years. Where Mr. Elliott might have seen six hundred thousand seals we saw, perhaps, fifty thousand. The bulls were all on the rocks, although many of the females had not yet left the water.

As we strolled slowly down the rocks, we saw hundreds of gatherings similar in all respects to the one first under consideration, some a little scattered, owing to the nature of the ground, others crowded together until there might be reasonable doubt as to the proprietorship of many females on the frontiers of contiguous homes. No man, not in complete chain armor, would have dared to pass between them. One bull is always bad enough, but a great flopping, charging brute

within reaching distance on either side might reasonably appall the stoutest heart.

We all found it more or less difficult that first day to pick out and study particular traits or characteristics. There was too much newness, too much strangeness about the experience as a whole to permit it. One's thoughts always tended to generalization. It was hard to separate one sound from the thousands upon thousands that built up the mighty roar. There was not a single smell we could recognize again, apart from the aggressive, heterogeneous smell that had such a body to it. We even had, so far, no favorites among the myriads of neat little females, busy showing off gaudy coats varying in color from the glistening black of an animal just out of the water to the different shades of muddy brown, mottled white, and steel-gray of others several days on the rocks. There were thousands of hard-looking bulls, showing up black, dull red, or dingy brown, with rough, uneven coats, battle-scarred and shop-worn. But not a bet had been made upon the fighting qualities of any one of them. It was just a turbulent, noisy, warring host, every atom of it struggling for place, downing his neighbor if he had the ability, stealing from him if he could; while passed about in all directions, until captured and held by the strongest, were the only goods of any value in this little world of the rocks. It was not unlike Wall Street, or the stock exchange, or any of the other places in which the human struggles for existence and scoops his fellow-man. All the prototypes were there on those rocks, as in the beginning of things for the *genus homo*. There was the big, burly, successful fellow who had shoved ahead, shouldered all opposition from his path, seized what he wanted, and at last was settled in enjoyment of his gains, with a chance of losing all if caught napping. There were others not so able; cheerful mediocrity, with ten helpmates, contented with the "second best;" objects of contempt, possibly, to their more ambitious and successful brethren with fifty wives, envied, most probably, by others less fortunate than themselves. There was the rather ancient, whipped-out bull, with a solitary wife, realizing that he was not what he once had been, but with sense enough to recognize the limitations of age, drop quietly out of the crush, lay low, be satisfied with one partner, and put in all his spare time being nice to her. Then there was the young, ambitious fellow, not too scrupulous, who had started business in a retired nook with two wives as his stock in trade. That was a good beginning, and if he takes things quietly and waits until he grows up to a larger family, he will do well. But, after the manner of very young people suddenly grown prosperous, he is bound, sooner or later, to make an ass of himself,—try to run with the giants when he can only crawl with the pigmies. Instead of looking out for what he has,—more than he has ever had, or has any right to expect,—he will start in ere long to augment his gains, stand up against

some battle-scarred capitalist, be wiped out in one round, and driven entirely off the rocks. Then back of all, encircling the active battle-ground, were those that had had their day, bulls that were once mighty fighters, lords of the rocks, but now old and weak, worn out, capital all gone, "risin' fourteen year,"—corresponding to seventy and the poor-house among men,—no longer able to contend with the rising generations, beaten from place to place, catching a wife and holding her until lusty '92 impressed upon them the fact that muscle went and age didn't; and at last, disheartened, run out of the race, sorry occupants of the upper rocks, nursing their sores, companions of the very young fry, just coming on, whom they envy and hate. Nothing is left for these worn-out old nags but to muse over former victories and live on the pleasures of other days. Realization is a thing of the dead past; in the present there is not even an honorable, respected old age; and the future will be a continuation of the present, then death. There is something strangely pathetic about these moss-grown old back numbers. One feels sorry for every chestnut among them; but the youngsters, those technically termed "bachelors," their condition provokes a smile. And here, as far as they are concerned in the affairs of the heart, the analogy which holds good in the main between civilized man's struggle for lucre and the bull seal's for wives breaks down.

Gentle reader, the "bachelor" is a young male seal, and he is the prettiest fellow in a sealine way imaginable, not even excepting the female. But he has absolutely no show. Instead of giving the older fellows the go-by, setting the pace, thinking he is a devil of a fellow with the fair,—as is not unusual with the twenty-year olds among us,—he is "not in it." This is slangy, but there is no other expression which does equal justice to the extent of the exclusion of the young male seal from all that constitutes the pleasures of rookery life. No matter how tall and slender and graceful he may be; how small his after flippers, or how delicate the turn of the forward ones; what the cut of his bang, or how intense, melancholy, Sara-like the cast of his muzzle; no matter how skillfully he climbs rocks or catches fish; sports, turns, dives with all the litheness of a trained athlete; or how smooth and glossy he keeps his precious coat, it all availeth nothing. As he sits admiring himself, or busy with the pleasures of anticipation among his fellows up the beach, no female can eye him longingly with any chance of knowing him, really well, for years. The present can have nothing for him, except fishing, swimming, sleeping, and strutting about what is called the "parade,"—the forlorn stretch of rock belonging to him and the superannuated bull,—sunning himself, if there be a sun; more probably, indulging in an unbroken succession of fog-baths.

These slight, graceful dudes have a hard time of it. One of them would no more dare to venture down and steal a word with some pretty

little harem inhabitant than he would dare to start housekeeping regularly on even the most impossibly small scale,—the twelve-hundred-dollar scale among really civilized people. The monarchs of the rocks, the strong, lusty old bruisers, hate them all; and as might is always right in this curious little world, the gay, young bachelor travels in constant fear of his life or laceration as he goes back and forth from his lonely home to the water, giving settled families and others moving in a wide berth if he be wise.

An example of a bachelor not being wise came under our observation some little time after that first trip. Mr. Peters was again of the party. There are certain objections to Mr. Peters as a practical joker; but he is a fluent, easy talker, and knows a great deal about the seal. If there is anything he does not know, one unacquainted with the subject would never find it out.

Rounding a rocky point, we came suddenly upon a young bachelor sound asleep. He was a handsome fellow in repose, nearly six feet long, well proportioned, with a sleek, well-fitting coat, and moustaches coming on very nicely. There were no battle-scars on him as yet, and he was without the disfiguring rolls of fat and coarse red hair all on end, or worn off in spots, that would make such a terror of him in about four years. We approached within six feet, discussed his points, and then Mr. Peters picked up a small clod of earth and dropped it on his ear. The youngster awoke with a start, opened a pair of very handsome dark eyes that suddenly grew big with alarm, gave one startled glance around, and with a howl of the most genuine terror proceeded to get under way. He did it with great expedition. Just one heave and he was upright; then backing water—I mean rock—violently, he gathered sternboard for ten feet, wore short 'round on the stump of an extremely abbreviated tail, filled away for the water, and off he went, a confused mass of terror-stricken seal, yelps, and working flippers as he literally "humped" himself into the distance. But most of his troubles were to come. In endeavoring to escape one danger he tumbled right into another,—one so terrible and certain that he should have appreciated it. His only thought was water and safety, and he galloped straight over the body of a drowsy bull, and the way he had on carried him far into the bosom of the twenty odd wives beyond. However welcome the intrusion may have been to the occupants of that particular harem,—he was a handsome fellow even in full retreat,—there could be no possible doubt about the position of the owner. For an instant he appeared dazed at the audacity of this assault on his privacy and rights; but when he grasped the full extent of the indignity and its source, he was mad from the soles of his flippers to the short, upright red hair on his poll. Here was a home-wrecker caught in the act; and the way that five hundred pounds of bull seal got up steam and charged the destroyer of his peace showed

he was excited and meant business. Away he went, right over the bodies of his cowering little wives, brushing them aside like flies with his powerful flippers in a dead, mad rush for the enemy. He just missed his victim. We could hear the big jaws snap as they came together, grazing his flank. Squalling with terror, the youngster arose to the occasion, and developed a burst of speed that, having witnessed his late great effort, struck us as marvelous. But his young, undisciplined mind couldn't stand the strain; and from that time on his retreat became a blind, fearful, purposeless rush. Away he went, helter-skelter, running the gauntlet of the Slavins and Jacksons and Sullivans that came to the frontiers of their families to give him just one. Now running over a seraglio, just missing "pa," under the gleam of whole batteries of teeth, a snap here and a shave there, he reached the sea at last, and we could see him in a series of long, beautiful dives heading for Santa Barbara and the south, growing smaller and smaller in the distance until lost in the mist. He is probably going yet.

CHAPTER V.

AFTER talking it over, we came to the conclusion that the bull seal leads the busiest kind of life. From our observations at various times, it appeared no sinecure to preserve the integrity of a family of thirty-one wives intact, successfully resist outside aggression, keep order among the females disposed to squabble and make trouble, and get the necessary rest and sleep. There was nothing at all restful about his work. Often, when engaged in a friendly practice mill with his next neighbor, he would have to stop proceedings to act the Solomon among his helpmates. As he looked around with the light of battle still in his eye, and all his hair and whiskers worse than any porcupine, a pretty aggrieved little female would paddle up, raise her tear-stained muzzle, and sob something, probably, "Pa,"—he was always big enough to be called "pa,"—"Mary snapped at me," or, "Look at my sack, where Fannie tored it," or words to that effect. Then the old fellow would hustle about, and, without risking his popularity with either Mary or Fannie, make things so generally uncomfortable for all hands, that it was a fair enough warning what any sister might expect if she didn't keep the peace.

The female seal has many of the responsibilities of life lifted entirely from her shoulders. She is always passive; she seldom has the bother of having to make up her mind about anything; she sits resignedly on a rock and sees George and John do battle to the death for her favor; and when the conflict ends she is merged quietly into the goods and

chattels of the conqueror. If she has known George a long time; if they took fishing and swimming lessons together when no bigger than Newfoundland pups; if she likes him a heap better than the Sullivan who sent him a torn and battered wreck up the beach, John is never the wiser. She is a very philosophical little woman apparently, appreciating that her sisters on the rocks were born into the world mostly to suffer. If she has any of it to do, she conceals the fact and quietly adapts herself to circumstances.

As I have intimated before, the female seal, when not *passée*, is altogether the prettiest, daintiest, mildest, most symmetrical and well groomed of the rookery inhabitants. The bachelor has a certain advantage from his greater size; a woman would always say he had the larger share of good looks; but there is something so taking about his little sister with her winsome muzzle, and big, tender, appealing eyes, that a man instinctively votes her a success in everything,—that is, before he has had a chance to study her character. Moreover, she boasts a more pronounced frontal development than her lord, and this gives her an air of intelligence that he does not have. There is little of the brute about her; and when one compares her fragile, delicate build with the huge, coarse bulk of the Turk whose plaything she is, it becomes a matter for surprised speculation why Nature did not gift her with speed enough to escape, or the necessary physical power to occasionally follow her own fancies,—if cow seals have fancies. In fact, do pretty much as she pleases, not always what some big, lumbering brute pleases.

This is the first idea, and it survives possibly the second visit to a rookery. A closer study of the domestic economy of seal life, however, only demonstrates what a consummate mother old Nature is, and how well she balances her forces; never creating one that cannot in some way be overcome; never granting an attribute to one animal without giving compensating advantages to those around. One crunch of the powerful jaws of the bull seal, and almost without effort to him, the life of his delicate helpmate would go out. But—and in this "but" is her safety—he is seldom so exasperated that he kills her outright. He is always long-suffering, puts his trust in the future, hopes for the best, and that Fannie will quit her aggravating ways, brace up and be nice. It is no unusual thing to see bulls snap the air close to the heads of recalcitrant females, hustle them about a bit on the rocks when they try to leave the family circle without permission, make their lives a burden to them in a big, blundering, headlong way; but it is very seldom indeed that one of the little things suffers injury. It is not necessary to waste any sympathy upon the female. She is a most perfect mistress of all the arts of cajolery and dissimulation. Her ability to fool her lord under most of the varying conditions of rookery life constitutes her strength. No matter how outraged his dignity, how violently he may flounder about, bellow at her, swear he

won't stand her nonsense any longer; that she must not go fishing without permission; say she has got to stop flirting, glare and show an assortment of teeth that ought to terrify any timid female out of her wits and into good behavior; when she sidles up, cuddles against him, waits for the clouds to roll by a bit, and then gets around in front, and after a few shy passes, reaches up for the thick fur on his neck, takes a mouthful, and hangs there; however high in the air his nose, down it comes by degrees to a running accompaniment of rumbling growls, of course growing fainter all the time; the fire dies out of his eye, the big, ugly head drops until he can rub his jaw against her pretty muzzle, and he is disarmed; says he has acted like a brute, and swears it shall not occur again. She can afford to wink quietly to herself. Her victory is more complete than if she had the muscle to slam him down on the rock and take charge. The good points of the girl-seal are numerous; but even the most enthusiastic admirer of the sex would be unable to say that she is above criticism. She lacks stability. A visitor to the rocks at any time can see a female apparently well satisfied with existing home arrangements suddenly become the gage of battle, change owners by being unceremoniously picked up by the neck and slung into the harem of the victor; and then, even after suffering such indignity, cuddle up to him—a total stranger, too—and try to make herself solid! There are no tragedies on the rocks in which a heroine figures. No one ever heard of a devoted wife, suddenly finding herself the spoils of war, going off and holding her head under water because Henry's retreating form disappeared up the beach to return no more, or refusing to go out and catch fish because Claude had lost an ear, several ribbons of fur, and some flesh, and she can see him, lone and lorn, up the rocks among the old'uns and the young'uns.

Only on one occasion did we see a female rise above being the creature of circumstances and manifest a preference. Then it wasn't much to her credit, and said very little for her early home training. It happened in this way. A big, fine-looking bull had but one cow,—a little beauty though. As well as one can ever tell in such matters, she appeared to be thoroughly, hopelessly, entirely in love, and he wasn't much better. Evidently there was not a thought in the whole world of the rocks for her in which John did not occupy the prominent place. He was her one absorbing interest in life,—her wardrobe was too primitive to take off much of her attention; and although the bulls all about seemed to be struck by her figure and general appearance, and were only too anxious to get a flirtation regardless of consequences, even the electric light of female scrutiny would have failed to discover anything in her conduct that might merit adverse criticism. She put in all her time being nice to John; and it is needless to say she was true to her consort, and exercised all the arts by which her influ-

ence could be maintained. Now and then for variety she moved coquettishly off, as though with the intention of leaving for good. But at four feet distance she would always stop as if she just couldn't, look archly at him over her shoulder, probably aware that it brought out the turn of her head and the curve of her after flipper most becomingly, hang trembling in the wind a second, as pretty a picture of sweet indecision in a seal-skin sack as one would wish to see, and back she would come with a feminine abandon and disregard for public opinion refreshing to witness in these days of well-bred repression and reposeful rigidity. And then she would snuggle up close, and hang on with her little white teeth to the thick fur on his neck, and look altogether like a tender, twining, domestic parasite with a good deal more than the average sticking and staying powers. Whatever John might be doing at the time, admiring the scenery, or busy eying a neighbor with eleven wives and designs on his treasure, he always stopped everything to lean his jaw quietly on her head, as much as to say, "You just keep still, sissy. I'm big enough, and old enough, and Buddha only knows I'm ugly enough to provide for you in style, and keep you out of the grip of that polygamous old pirate over there,"—an admonitory glare at the proprietor of eleven helpmates over the way. Then she would cock her head becomingly on one side, appear to ponder over her advantages, and say to herself, "The dear, ugly old thing! If he ever fails me; if this prop and stay of my life ever slips out,"—an anticipatory shudder,—"I'll just flop right down on the cold rock and die, I know I shall!" They looked too soft for anything.

We watched this beatific scene for half an hour, and moralized over it, and compared notes, and drew conclusions. Why should this fine, lusty fellow be so pronouncedly monogamistic in his tastes, when all the bulls about had such delightfully large, constantly changing families? We debated the question at length, and decided that, after all, he was pretty sensible. Evidently he had the belle of the rocks; there wasn't a female in sight with even a little of her style or peculiar grace; it looked like one of those matches said to be made in heaven; it was easier to watch one wife than twenty odd. We approved of John, he appeared to have so keen an appreciation of the better sort of domestic bliss. Then it was correspondingly nice for her. No division of affection, the twentieth part of a glance or smaller fraction of a smile; no rivals for favor; no small feminine jealousies; no backbiting, literally; no sisters to come in for the soft spots on the rock and divide up the other furniture of the establishment or the goods of John. We recognized the good in his position, but honestly gave her credit for an entire absence of self-interest. We became quite worked up over this ideal union on the rocks. But—these "buts" sometimes play the dickens—a cloud suddenly appeared on the domestic horizon. It was

no shadowy, unsubstantial cloud. It came up from behind in the shape of a five-hundred-pound bull that had been idly flopping down the beach. He was an appreciative fellow with a cultivated taste in females, stopped dead in his tracks, eyed John's dainty treasure and sole household ornament a moment, and then it appeared to percolate into what stood for his intelligence that he felt drawn towards her, and that she would make a good nucleus for his future home. Our John recognized the gravity of the situation in a flash, charged the enemy while he was clearing for action, displayed first-rate battle science in the mêlée that ensued, and emerged from it with a part of the poacher's ear. The latter backed off to reckon up damages, while John gradually relaxed vigilance, and began telling his ecstatic little friend what he would have done to the other fellow if he had only kept on. She metaphorically patted him on the back by reaching up for another mouthful of neck fur, and altogether seemed happy and satisfied with the result of the encounter. We drew a breath of relief all around, but it turned out to be a trifle premature. The other fellow evidently had come to the conclusion that he had suffered himself to be surprised, and was more scared than hurt. He had encountered just enough opposition and was minus just enough cartilage and epidermis to make him angry and determined. So John, suddenly looking around, found him galloping warily about, sparring for an opening. As John again took the initiative, the bristles of his moustache stood out like darning-needles, and there was a line of perpendicular red hair going the length of his spine that showed he was ruffled and excited. It was his fight from the first. Mr. Peters, who, there is reason to believe, had seen many encounters within the ropes, and talked learnedly on that occasion of "leads," "swings," "upper cuts," "in punchin'," and "jabs," said, after the first round, that the other fellow was "heavy on his pins," "lacked reach," and was "bested," "groggy," and "clean beat," whatever all these recondite technical expressions may mean. And what do you suppose the cause of all this war did? Sit there, her tender heart throbbing with love and fear; quivering all over in an agony of dread for her John; wishing she were a bull seal just a minute to help along the good fight; wringing her flippers and watching each pass through a mist of tears; thinking of drowning herself, or dying her sack a becoming black if things went wrong? Not much. She sat quietly up with the hard, cold air of a connoisseur in such matters, critically kept tally of the points of the struggle, and then, when John became interested and had both jaws and flippers fully occupied, she calmly slewed around and paddled straight into the camp of the "Old Pirate" with eleven wives!

We looked in a mute, dazed way at each other for an explanation of this strange thing, but the problem was too much for us. Only a woman could tackle it successfully, and there were none in the party. Mr.

Peters swore quietly to himself, while the rest of us made vague, general guesses as to the cause which could produce such an effect. Perhaps she was tired of John and needed a change; perhaps she wanted companions, and missed the gossip of a well-filled seraglio; perhaps—give her the benefit of the doubt—she and the "Old Pirate" had long had a penchant for each other, and she only employed the weapons of her sex to fool John until she could make her escape; perhaps her intentions were the best in the world and she couldn't help it; perhaps she suddenly and "unbeknownst" to herself changed her mind about everything in the sealine world and became the servant of impulse; perhaps—but why "perhaps" any more? Why grope longer through devious ways in utter masculine darkness in a stumbling search for the hidden springs of feminine motive and action?

We did not wait to see John turn to receive the reward of successful valor. We spared him that. As we walked slowly homeward, we disposed of him thusly: He would in future be a cynical seal with no trust in the female of his kind. He would speedily acquire a numerous seraglio, and be an iron disciplinarian, a household tyrant, a rock despot, with just as many wives as he could steal and hold; because, although a female now and then would doubtless fool him, it might be difficult for thirty to do so.

While to the casual observer the female seal is a thing of mildness and beauty, truth compels me to state that to her sisters in misfortune she can be cross. Every one of them will willingly get down and kow-tow to the old Turk in charge; in fact, they are always on their knees before their lords; but, after careful investigation, we have failed to discover that the lady seal carries about with her that atmosphere of gentleness, mercy, peace, and good-will that should envelop each particular atom of the infinite varieties of the sex in all species; or that she displays the uniformly delicate consideration for the feelings of others which we all try to think is a sure-enough feminine attribute,—not the result of ages of evolution, hot-house breeding, education, or interest. In fact, there appears to be considerable spirited back-talk and general gossip in these rookery homes, and if the limitations of the members of them are such that they are unable to peck holes in the reputations of erring sisters, they make snarls and spiteful snaps do very well for the amenities of the sewing circle and the scandal club. They do bully each other unmercifully, and I am afraid the manifestations of their likes and dislikes are often calculated from the effect they may have on "pa." Several of us once saw a harem inmate, apparently on the best of terms with her companions, suddenly conclude that it was about time to go out and fish; and, relying upon her influence with the head of the family, she started for the water without permission. However willing he may have been to allow her all the privileges of a parlor boarder in his establishment, he evidently didn't

consider this move a good example for the others of the family. He thought it a bad precedent to establish, so he promptly paddled after her, headed her off, and drove her back to the fold looking very sheepish and ashamed of herself. To complete her discomfiture, six or seven of those wives—they probably had hoped the scheme would succeed—crowded about, snapping and snarling at the culprit, possibly that His Majesty might see and appreciate how much better they were than she. Then, again, the favorite for the time being appears to be treated with much consideration; as if there were some way in which her influence with the head of the family might benefit those sycophantic females, and they knew it. Altogether the female seal looks out for herself very well; and her lot, though hard in some respects, is properly padded in others.

She is an admirable little mother, though. From the time her offspring is a black-haired, coughing, sneezing, helpless mite until he is about the size of a six months Newfoundland pup, able to swim in the breakers and reinforcing his diet by an occasional fishing excursion, she makes it her business to follow him up and keep him in sight and out of trouble. The last is a difficult task, as the pup is never tired, never feels restful, never is quiet a minute, always playing hookey, always fighting, wrestling, and struggling with everything of his size in sight, downing his brothers and sisters, and waging a perpetual war with the small fry of all contiguous families. Only, his mother will never face danger on his account. One may approach, pick up the pup and walk away, and while the youngster is squalling and spitting in a paroxysm of terror, the mother's one idea is her own safety. She puts for the breakers without a thought of him, and will not return until the aliment she carries rather incommodes her, and she thinks it about time he should have it. Then she lands, threads her way through whole troops of these little fellows, apparently as much alike as so many peas, stops every few seconds and listens for that one cry among the thousands of similar ones about, escapes the open mouths of the hungry youngsters that flock to the front, and continues the search until her offspring is found. Often it takes a long time. We once saw a poor mother come out of the water, and after what appeared a thorough scrutiny of hundreds of squalling pups, stop in a helpless, despondent sort of a way, as much as to say, "It isn't any use; I know I left Charlie somewhere about here, and now he's gone and got lost." Then, with the tendency the fond mother always has to excuse her offspring, "He's been led off! I *told* him not to play with that bad pup on the next rock!" She looked tearful here and stamped her flipper, so this must be what she said. It was very distressing. We felt it would be nice to go down and help, but there were hundreds of pups scattered about, and we didn't have her instinct to guide us. But our sympathy was wasted. Suddenly the little woman started as though struck,—Charlie Rose had

in some way manifested himself,—without any apparent reason as far as we could see. She gave a gurgle of delight, dove over a rock and disappeared on the other side. We circled about to see what it all meant, and were confronted by a picture of the most thorough-going home contentments. All trouble was over until the next time. There was the mother with her head thrown back, comfortably extended on her side, while deriving nutriment in an eminently satisfactory manner, though struggling fantically all the time to get nearer the source of supply, was her Charlie. As he became excited and heated over his work, she fanned him, and kept the flies off with a gentle, undulatory movement of her left hind flipper. It was a beautiful object lesson.

WM. RAWLE SHOEMAKER,
Ensign U.S.N.

(To be continued.)

THE DANDY BOSON.

NEVER did a man differ more in appearance and manner from the traditional boatswain of a man-of-war than did Philip B. Carson, who held that office in the first ship to which it was my fortune to be attached. It is usual to appoint officers of his grade from among the most deserving enlisted men in the navy, but in the case of Mr. Carson this rule had been deviated from, as he had received his nautical training in the merchant service, in which he had held a command previous to the war; but in spite of or, perhaps, because of this he was the best boatswain I have ever met with; no part of his duty was ever left undone, though his method of doing it was somewhat peculiar. Those were the days of the flapping sack-coats and flannel shirts of war times, and less attention was paid to the little details of uniform, or even to neat and officer-like appearance, than at present; but no such charge could have been sustained against Mr. Carson, except that in the matter of gloves he may not have strictly conformed to regulations, if, indeed, there were any on the subject, for that was before the day of the "blue-book," and the few orders as to uniform printed in the back of the annual register were generally looked upon as dead letters and seldom read.

Carson was a handsome fellow, about five feet ten inches in height, with well-kept black hair and moustache, and his invariable costume in good weather was a natty round jacket, which, in common with the sack-coat, was the service dress of that day, a regulation cap worn slightly on one side of the head, patent-leather pumps, and *lavender kid gloves*. In very warm weather this dress was so far modified that he wore spotless white and a Panama hat, and on wet or stormy days he might substitute a pea-jacket and something heavier in the way of foot wear, but blow high or blow low, in tropic heat or arctic cold, lavender kids of some kind he always wore when on deck. Thus accoutred he would appear on deck in the morning, saunter to the top-gallant forecastle, and glance around with an air of being thoroughly bored, but that apparently careless glance took in every detail alow and aloft. Perhaps a fault would be detected in the main rigging, when, in a voice as soft as any sucking dove's, he hailed, "Maintop,

there!" No answer, and the voice was raised a little, "Maintop, there!!" Still no answer, and then would come, in tone of thunder, "Maintop, there!!!"

"Ay, ay, sir," from the maintop.

Then dropping into the gentlest of voices again, "Ah! Who has charge of the maintop this morning?"

"Me, sir," in a gruff voice from aloft.

"You will, I trust, excuse my defective vision, but I am utterly unable to distinguish your features from the deck. Might I venture to inquire your name?"

"Weeks, sir."

"Oh! Mr. Weeks; so you are in charge of the maintop at present. Well, how do you find yourself this morning?"

"Very well, sir, thankee."

"Ah! I'm happy to hear you say so. By the way, Mr. Weeks, I trust you will understand that in my capacity as boson of this ship I am sometimes obliged to use language as distasteful to me as it may be to the recipient, and, in pursuance of that duty, I am now constrained to say to you,"—here came the loud harsh tone again,—"that, —— your lubberly eyes, if you don't get those —— Irish pennants out of the rigging I'll have you disrated and made Assistant Jimmy Ducks if any self-respecting Jimmy Ducks will consent to use your —— lubberly carcass to swab out his hen-coops with. I trust, Mr. Weeks," assuming his suave manner again, "that you will not construe any of these remarks as personal, but will fully understand that I am speaking solely in my official capacity."

Then he would stroll through the ship, apparently taking no more interest in what was going on than if he had been a casual visitor, but really taking in every detail of the work in his department, commending where commendation was deserved, and scoring without mercy those whose work was badly or carelessly done. In spite of his peculiar methods his duty was well and thoroughly performed, and both officers and men liked and respected him accordingly, a respect which when they had seen him in action ripened into admiration. They had but one opportunity of doing this while he was with us, then we had some hot work in passing a shore battery, the first shot from which fell considerably short.

"That won't do, gentlemen," exclaimed the boson. "A little more elevation, gentlemen, a little more elevation."

The next whistled high over the deck and fell into the water some distance beyond us.

"That's better," said Carson; "good line shot, but too high."

Then one cut away part of the standing rigging.

"That's more like it, gentlemen, that's more like it," and, taking off his cap, he made a profound bow to "our friend the enemy,"

and in this strain he commented, as coolly as if he had been watching target practice, until we were out of range.

Carson never drank to excess, and had none of the coarser vices to which sailors are too often addicted, but one moral failing he certainly possessed to a greater degree than any one I have ever met: he would draw the long bow, and nothing delighted him more than to relate his marvelous, if imaginary, adventures afloat and ashore to the youngsters.

One warm afternoon we were all under the top-gallant forecastle smoking our post-prandial pipes, the steerage and warrant officers on the port side grouped around the boson, who was relating his numerous adventures by flood and field, and those of the wardroom within hearing distance on the starboard (the wardroom dined at two and the steerage at one o'clock in those primitive days), equally amused, though etiquette forbid their showing it to the same extent.

"Boson," said one of the youngsters, "did you ever do any gambling?"

"Only once, gentlemen, only once, and then on a very small scale," answered the boson, twirling his moustache. "Years ago I was up the Mediterranean, first mate of a fruiter at fifty dollars a month. Not much margin for gambling there with a wife and two babies at home. One night I was out with some other mates, and I must confess, gentlemen, that, being unaccustomed to the effects of spirits, I had taken a little more than my allowance of grog,—not intoxicated, gentlemen, I never was intoxicated in my life, but just enough to make me a little reckless. Well, we strolled into a place where they were playing a game which I think they called *rouge et noir*, and as the others bet, I, being, as I have said, somewhat reckless from the liquor I had taken, ventured a napoleon. It won and I let it lie; again it won, and again and again and again, doubling every time, and I, half stupid from drink, let it remain until it had doubled forty times, and then at one fell swoop I lost not only my winnings but my napoleon as well."

The paymaster's clerk, old Accuracy, called "Ac" for short,—his name was Joe Temple, but he was so universally known by his well-earned sobriquet that the men sometimes called him Mr. Accuracy at the pay-table,—had taken out his note-book and was making some memorandum during the progress of the boson's yarn. Presently he said, in his slow, drawling way,—

"A napoleon is four dollars, isn't it?"

"About that in round numbers," said the boson.

"How often did you say it doubled?" asked Ac.

"Forty times I said; I think it was forty-one, but I like to be within bounds."

"Was it a heavy table?" inquired Ac.

"Just an ordinary *rouge et noir* table, I suppose, though it was the only one I have ever seen, and you are no doubt more familiar with

them than I am," said the boson, with a wink, as if to say, "I had him there;" but the clerk, disregarding this sally, continued:

"How many piles were there?"

"Four,—four beautiful little piles of sparkling gold; I think I can see them now," exclaimed Carson, looking radiant. "But why these questions? As the lawyers say, they seem irrelevant."

"All right," drawled the cross-examiner; "if you'll tell me how high the ceiling of that room was I won't ask you any more."

"This is ridiculous," cried the boson, angrily. "I don't know, sir; I didn't measure it."

"Well, boson," said his tormentor, "I don't blame you for getting a little riled when you think of that night, for by a simple arithmetical calculation which I have made here I find that when that bet had doubled itself forty times the table contained one trillion one hundred and forty-two billion five hundred and forty-two million five hundred and eighty thousand seven hundred and thirty-six napoleons, which, at four dollars each, would be worth four trillion five hundred and seventy billion one hundred and seventy million three hundred and twenty-two thousand nine hundred and forty dollars, weighing, at sixteen dollars to the ounce troy, ten million six hundred and twenty-six thousand two hundred and fifty-one standard tons, with a fraction of nearly a ton over, which we will allow for abraded coin, and that, allowing twenty napoleons to the inch, each of the four piles was two hundred and twenty-five thousand four hundred and six miles high, with another large fractional remainder, which we will also allow for abrasion."

A roar of laughter greeted this announcement from both sides of the deck, for even the dignity of the wardroom officers gave way before it, in the midst of which the boson, with a face like the wattles of a turkey cock, snatched the book from Ac's hand. He knew enough of figures to see at a glance that the calculation was substantially correct, but was too fertile in resources to remain embarrassed for any length of time, and soon interrupted the hilarity by exclaiming,—

"Why, what does this mean? I said four, not forty."

"That won't do, boson," cried several together; "you said forty, and you thought forty-one."

"Oh! gentlemen, gentlemen," remonstrated Carson, "shame on you at your age for not having better ears. If the topmen did not hear more distinctly than that I should find it necessary to rake the lubbers fore and aft oftener than I do now. What I said was, 'It was four, I think it was four that won,' and now I am sure of it, for I remember that there were just four napoleons in each of those beautiful little piles." And, knocking the ashes from his pipe, he sauntered aft as jauntily as if Ananias was an unknown quantity represented by x in his mind.

Poor old Carson, I would not have made this exposure of his weakness had not the heart that might have been pained by it ceased to beat years ago. Peace to his ashes, for a better boatswain or braver man never squared yards or faced a battery.

CASPAR SCHENCK,
Pay Director U.S.N.

NOTE.—After this article was in print I was relating some of the peculiarities of the dandy boson to a friend, who called my attention to the fact that the character closely resembled that of Boson Chucks in "Peter Simple." If I have ever read "Peter Simple" it was in my early boyhood, and I have quite forgotten every character and incident in the book. I can only say that my boson actually existed and used the exact language here quoted. He may have, and probably did, take Chucks for his model, but the plagiarism, if there is any, was his, not mine.—C. S.

AMONG OUR CONTEMPORARIES.

Mr. Burnet Landreth, the president of the "Association of Centenary Firms and Corporations of the United States," at the fifth annual meeting of the society, gave some information which is of interest in these days of silver agitation and all it implies.

We have all heard of the Virginian planters who bought their wives from a newly-arrived vessel for one hundred and fifty pounds of tobacco, valued at three silver shillings a pound; and the debt for wives, it was ordered by the court, took precedure over all other debts.

"Even in 1732 Maryland passed an act making tobacco a legal tender at one penny per pound, and Indian corn twenty pence per bushel. As late as 1760 tobacco and whisky were even used in payment of the salaries of clergymen. For instance, the writer knows of an Episcopal parish, the clergyman of which in 1760 received his salary one-third in cash, one-third in whisky, one-third in tobacco. Of course he sold the whisky and tobacco for what it would bring."

Before the war of the Revolution the colonial currency had much decreased in value,—"the colonies being little more than co-operative land companies," without internal system of taxation. "Such local taxes as were levied were very simple and light, and were settled in paper money, the farmers having no metallic money, other debts being paid in produce."

Before the Revolutionary War, Massachusetts currency had depreciated until it was eleven dollars in paper to one dollar in silver, and thus on until we come to Pennsylvania, which was the best of any of the colonies, one dollar and eighty cents of her currency being equal to one dollar in silver.

"The gold coins circulated by the British army during the war were reduced by clipping; and as the quartermaster-general of the American army was charged a premium by Morris on the full-weight coins procured from France, the American quartermaster-general himself had to resort to clipping, and wrote Morris to send him two good pairs of shears and a lot of punches and leaden anvils, and to inform him how the English goldsmiths put in the plugs."

At the beginning of the Revolution the Continental Congress

issued three million dollars of legal tenders, but they at once began to depreciate. In four years the legal-tender issue had reached the sum of two hundred million dollars, and by 1781 these notes were only worth one per cent. of their face value. In that year Congress chartered the Bank of North America, in Philadelphia, "which honorable institution still exists to the credit of the city and a monument to able management." This was a great step towards solid finance, and is, in fact, the first solid banking house which was engaged in any government transactions. "Exchange in colonial days was very complicated; the dollar was a Spanish coin, while the colonists kept their accounts in pounds, shillings, and pence. Estimated in the paper currency of the colonies, Spanish dollars passed in Georgia at one to five paper shillings; in New York at one to eight shillings; in Virginia at one to six shillings; in South Carolina at one to thirty-two shillings; in Pennsylvania at one to seven and a half shillings. Merchants did not understand the methods of conversion of fluctuating values, consequently this alone was almost an insuperable barrier against intercolonial commerce. The currency in which the Pennsylvania transactions of the Revolutionary War were carried on was kept in dollars and ninetieths of dollars."

In the writer's childhood the currency in use in Philadelphia and its neighborhood consisted of Spanish "quarters," "levies," and "fips," or "eleven pences" and "five-pennies," which sometimes had the pillars on them, but were often worn almost smooth, and very sharp at the edge. There were United States half-dollars and dollars in circulation, but it was customary to state a price, for anything under a dollar, in "levies" at twelve and a half cents each. Then the dimes and half-dimes gradually came in, and for a time seriously disturbed the calculations of small retailers of all kinds.

During the past year we have endeavored to clear up the rather curious history of the camels imported by the government at great trouble and expense a few years before the breaking out of the Civil War. The animals were reported to have run wild, and occasional paragraphs in newspapers lent color to this report. If there are any wild camels it shows an entire change in the nature of the animal due to his introduction to the Western world. When the guest at a Scotch table had sheep's head set before him, and came upon the brains, he exclaimed, "Bless my soul! I didn't know that sheep had brains!" And the same surprise would be experienced by naturalists if it were proved that camels had brains enough to lead a completely feral life, independent of man,—which has not been the experience of the ages,—for they are animals requiring the supervision of man as much as sheep do. That there are wild sheep in several parts of the world is

beside the question, for they are of a variety considerably removed from our domestic *Ovis aries*. Now, the question was, whether any had gone wild; and if so, whether they had deteriorated by doing so?

For some months the response was meagre, but at last both army officers and civilians who have means of knowing about the matter have been kind enough to send information which is within their knowledge. It is unsatisfactory as regards natural history, but tolerably complete in some other respects. Our thanks are due to all who have taken the trouble to tell us what they know; and only those who have served or traveled in that immense region, the "Southwest," can answer such questions at all.

To readers who have not followed the subject we may say that the selected camels landed by the government in or about Indianola, Texas, were intended for transport animals in the quartermaster's department of the army. Whether on account of their stupidity, or their bravery, a camel may be used in military operations, generally being as steady under fire as a "stone wall." The Persians, as well as other Asiatics, mounted small pieces on the backs of camels soon after the discovery of such artillery, which they called *zambwah*, or "little wasps." After the battle of Sobraon, where the English gained a signal victory over the Sikhs, two thousand of these artillery camels are said to have been captured. It seems a large number; but that is the report. During the so-called Mutiny in India, the British had a camel corps on which one of the regiments of Highlanders was mounted. If they were in their kilts they must have presented a rather remarkable appearance.

Sir Charles Napier had also a camel corps in Sindh, and is said to have marched it seventy-five miles in one day, defeated a rebel chief, and then marched back again on the next day.

In 1878 the British used camels in their Afghan campaign, and it has been said that their government paid for fifty thousand camels lost during the operations, many being driven to death by their owners in order to get the bounty, as well as the hire.

The use of camels to mount troops during the English campaign for the relief of Gordon is well known. In fact, somebody wrote a book about it; but as the whole operation was a conspicuous and disastrous failure, the part taken by the camel corps is of little importance. And now, to return to our own camels, which were the very finest specimens which could be bought. Did they deteriorate? Did they run wild? For years occasional paragraphs have appeared in the public journals in regard to wild camels in the Southwest, some persons declaring that they had seen them, but more stating that they had heard of them. As a "wild" camel is unknown in the countries which are their natural habitat, we must express some doubt about their existence here until more positive testimony than any we have at present is produced. To the officers and civilians who have given information

we feel very grateful, and we must give special thanks to the civilians who have taken the trouble to help in clearing up a curious question.

In a former number we gave Colonel Beaumont's recollections; and now Colonel Biddle, of the Ninth Cavalry, writes that he knew of a lot of horses which were being brought from California to Arizona being stampeded while drinking at the Gila River by camels which came to drink at the same time. Colonel Biddle does not appear to have been present, but speaks of "an officer" in charge of the horses as reporting that the stampede was of so serious a nature that it was with difficulty that most of the animals were recovered. The colonel is evidently of the opinion that these animals may have been the progeny of "the old stock abandoned by the Confederates," and says that it was common report that they bred them, and that he heard that some parties had sent persons to capture some for exhibition; that some had been taken and some killed by cow-men, as they stampeded their cattle and horses. Lieutenant Albee, United States army, writes,—

"In 1868 or 1870, when I was stationed at Fort Clark, in Texas, there was a herd of about sixty, old and young, in possession of a Mr. Copewood, whose *ranch* was at Santa Rosa, in Mexico, about seventy miles from Piedras Négras. Copewood obtained possession of them in Texas, during the Confederacy, and the older ones were those imported by the United States government before the war. Copewood used to make the journey of seventy miles from Santa Rosa to Piedras Négras in a day. On one occasion I rode one of Copewood's camels a considerable distance in the country back of Piedras Négras. During several years I heard rumors of a wild camel which was said to be in the vicinity of old Camp Verde, near the Bandua Cañon, but I never saw any reliable person who had actually seen the camel."

Mr. H. B. Adams, an old resident, and an authority upon such matters, writes from the San Antonio Club "that the camels which were imported were kept at Camp Verde until they were finally sold by the government, which was done late in 1865 or early in 1866. They were sold at public auction, and the whole herd was purchased by Mr. Bethal Copewood, now living in Austin, Texas. He afterwards sold small lots to several menageries who sent agents out here to make the purchases. What Copewood did with the balance I do not know. The camels were used before the war in transporting military supplies from this dépôt (San Antonio) to Camp Verde. Some were used on one or more military expeditions on the frontier. One of the expeditions was commanded by Lieutenant Holmes, of the old army. They went up in the Devil River country, and over to the Pécos. I think it was an experiment on the part of the government to ascertain how far the camels could be utilized as a means of transportation. If my memory serves me, some of the herd of camels were sent overland to

California soon after their arrival. I do not remember the number, or the particulars. The camels were never used by our folks"—by which term Mr. Adams means the Confederates—"during the war." He is not so certain about that, however, for our most courteous correspondent immediately states, "I was not in this department during that season of festivities." Testimony about *anything* is very difficult to get, especially if a few years have passed since the occurrence. These officers and gentlemen all testify to the existence of camels in the Southwest, but not one of them ever saw a wild camel himself. They had heard of them.

We still maintain the thesis: "Camels belong to some one. A stray camel is a dead camel."

E. SHIPPEN.

NAVAL AND MILITARY NOTES.

NOTES AND DATA ON NAVAL AND MILITARY MATÉRIEL AND ALLIED SUBJECTS.

It is the intention to collect and publish in this department of the "United Service" all information obtainable from current publications and other available sources concerning ships, guns, armor, explosives, small-arms, military and maritime affairs, and kindred subjects. As the data are derived largely from unofficial sources, strict accuracy cannot be expected; but all reports will be carefully examined and compared with others on the same subject, and it is hoped, by this means, to attain fairly correct results. Erratum notices will be published whenever errors are discovered in data previously given. As the development of the present plans for collecting information progresses, it is hoped to secure fuller and more authentic reports.

WAR-SHIPS AND TORPEDO-BOATS.

Great Britain.

The engines for the first-class battle-ship *Magnificent* will be built by John Penn & Sons, of Greenwich. They will be twin-screw, inverted, vertical, three-cylinder, triple-expansion, of 12,000 I. H. P. Steam will be supplied by eight single-ended, four-furnace boilers fitted with Martin's induced draft apparatus. The first trials of the Martin system were not very satisfactory, but later experiments are said to have been highly successful. The keel of the *Magnificent* was laid at Chatham, December 19, 1893. Machinery and boilers similar to those described above will be furnished by the Naval Construction and Armament Company of Barrow for the *Majestic*. The armor for these battle-ships will be of nickel-steel, Harveyized.

The keel of the second-class protected cruiser *Eclipse*, 5500 tons, was laid at Portsmouth, December 11, 1893.

The armor orders for the first-class battle-ship *Renown* are divided among three firms, Brown, Cammell, and Vickers. Like that for the *Magnificent* and *Majestic*, it will be of nickel-steel Harveyized. It is stated that the order given the first-named firm includes the redoubt plates.

The keel of the second-class protected cruiser *Minerva*, 5500 tons, was laid at Chatham on the same day, December 11, as that on which the keel of her sister ship, the *Eclipse*, mentioned above, was laid at Portsmouth.

The names assigned to the torpedo-boat destroyers building by Thorneycroft are *Ardent*, *Boxer*, and *Bruiser*; by Yarrow, *Charger*, *Dasher*, *Hasty*. The exact dimensions of these vessels have not as yet been published. While of the same general design and approximate size (200 to 260 tons), hardly any two destroyers so far ordered are alike in all respects. It is probable that water-tubulous boilers of some type or other will de fitted in nearly all of them.

The torpedo-boat destroyer *Daring* was launched at Thorneycroft's yard, Chiswick, November 25, 1893. Her dimensions are: Length on load water-line, 185 feet; beam, 19 feet; mean draught, 6 feet at a displacement of 220 tons. The engines are twin-screw, four-cylinder (h. p. 19, i. p. 27, l. p. 27 and 27, stroke 16) triple-expansion engines

of 3500 I. H. P. The boilers are three in number, double-furnace, Thorneycroft water-tubulous, each having 2964 square feet of heating and 63 square feet of grate surface, and furnishing steam at 210 pounds per square inch. The hull is similar in design to those of the *Havock* and *Hornet* described in the NOTES for September, 1893. The battery consists of one 12-pounder rapid-fire gun on the conning-tower forward, one 6-pounder on each side forward just abaft the turtle-back; and one 6-pounder aft. There is one fixed torpedo-tube forward and a double gun on a turn-table aft. Like the others of her class she is expected to develop a speed of 27 knots. The complement is 42 officers and men.

The torpedo-boat destroyer *Hornet* was launched by Yarrow on December 23, 1893. The *Hornet* was fully described in the NOTES for September, 1893. Her dimensions are the same as those of the *Havock*, and she differs from the latter only in having water-tubulous boilers.

The results of the natural-draft trial of the first-class battle-ship *Royal Oak* were published in these NOTES two months since. The four-hour forced-draft trial took place on November 23, 1893. The mean results were: Air-pressure, 0.98 inch; steam, 145.8 pounds; revolutions, 103.5 and 103.4; I. H. P., 5689 and 5882 for starboard and port respectively, total 11,571; average speed by patent log was 18.27, but the ship was very light, drawing (mean draught) 24 feet 10.5 inches, instead of 27 feet 6 inches. She was therefore only displacing about 12,000 tons instead of 14,150.

The second-class cruiser *Astrea*, 4360 tons, has completed her trials. The 8-hour natural-draft trial took place on December 13, 1893, with the following mean results: Steam in boilers, 147 pounds; vacuum, 27.11; revolutions, 130.65; I. H. P., 3811 starboard and 3789 port, total 7600; air-pressure, 0.44 inch; speed by patent log, 19 knots. The 4-hour forced-draft trial took place on December 16, with the following mean results: Steam in boilers, 149 pounds; vacuum 24.7; revolutions, 138.1 and 138.5; I. H. P., starboard 4437, port 4675, total 9112; air-pressure, 144 inches; speed by patent log, 19.75. The report does not state whether the vessel was down to her load displacement or not. The *Astrea* is built of steel, sheathed with wood and coppered. She is a sister ship in all respects to the *Cambrian*, *Charybdis*, and *Fox* (and others also), of which full descriptions are given in the NOTES for May, August, and September, 1893. The principal details are given in the May number; the other reports are supplemental.

The trials of the first-class protected cruiser *Theseus* took place in December, 1893. The Admiralty having decided not to push these vessels to the utmost, only so-called natural-draft trials were had. The results of seven hours' trial, with an air-pressure of 0.43 inch, were as follows: Steam in boilers, 149.4; vacuum, 27.1; revolutions, 96.24; I. H. P., starboard 5315, port 5293.4, total 10,608.4. The speed by patent log was 18.66 knots. The *Theseus* was not down to her load-draught by about 6 inches. Her displacement was, therefore, only about 7000 tons, instead of 7391 as designed. The first trial of the *Theseus* was a failure owing to priming of the boilers.

One of the first of the new first-class torpedo-boats (Nos. 88 to 97) took place in December last. This boat differs from all others of her class in having twin-screws. She was built and equipped by Thorneycroft. The mean results of the runs over the measured mile on December 14 were: Steam, 225; revolutions, 472; speed, 23.85 knots. The 3-hour continuous run, on December 21, gave: Revolutions, 467; speed, 23.5. The dimensions of the boat are: Length, 140 feet; beam, 15 feet 6 inches; draught, 5 feet 4 inches. The engines are 3-cylinder, triple-expansion, designed to develop 2000 I. H. P. The boilers, two in number, are Thorneycroft water-tubulous. The horse-power developed on trial has not been published. The armament consists of three 3-pounder rapid-fire guns and three 18-inch torpedo-tubes. The coal capacity is about 30 tons, and complement 21 officers and men.

For several years the most economical rate of speed at which vessels could steam was supposed to have been determined by what is known as Admiral Ryder's diagram method. The Admiralty has now issued an order directing that no further trials are to be made with this method, as it is not considered trustworthy. In future the captain of each vessel is to take the earliest opportunity, when engaged on ordinary service in calm weather, of ascertaining the most economical rate of speed of the ship,—that is to say, the speed at which the greatest distance can be run per ton of coal *per hour*. [So expressed. The words in italics could be replaced by the word *consumed* with great addition to clearness and exactitude.] For this purpose the engines are to be worked at different rates of speed for at least six hours at each rate, and the consumption of coal in hundred-weights per hour, speed of ship, distance run per ton of coal, and the average I. H. P. developed are to be carefully calculated and inserted in the engine-room register.—*Marine Engineer*, London. Of course any systematic method is better than no method at all. But surely a six-hour limit is entirely too low. If a proof of the fact is wanted, one has but to refer to the reported coal consumptions on official trial trips. For ships which are exactly alike in all respects, it is no unusual thing to see the coal consumption of one stated as 1.6 pounds per I. H. P., and of the other 2.3 pounds, or other figures equally divergent. Steaming distances based upon fair-weather, smooth-water, clean-bottom, good-coal conditions are quite sufficiently misleading as a guide to actual performance under average service conditions without introducing an additional form of error.

The *Northumberland* and *Agincourt* are to be fitted with Bullivant's system of torpedo-net defense. The armament of these ships is to be increased by the addition of six 4.7-inch rapid-fire guns, mounted on the upper deck.

Like the *Sharpshooter*, the *Spanker* is to have her boilers removed and fitted with others of the water-tubulous type. They are being made by the Société Anonyme du Temple, of Cherbourg, and are of the sort known as "Temple" boilers.

The secondary battery of the *Benbow* is to be increased by the addition of several 3-pounder rapid-fire guns.

The *Carysfort* is to be overhauled and repaired for service with the training squadron. Her battery, both main and secondary, will not, at present, be changed, but two 14-inch torpedo-tubes will be fitted.

The *Sanspareil*, which is a sister ship to the ill-fated *Victoria*, is undergoing considerable alteration at Malta dockyard, in accordance with plans recently sent from the constructor's department at the British Admiralty. No less than half a dozen additional bulkheads are being fitted between her decks, and several of her water-tight doors are to be permanently fastened up, while hatches to allow of ingress and egress to the compartments are being cut in the deck instead. These hatches are to be fitted with very high combings. Two reasons are assigned for this expensive rebuilding,—one that it is necessary to restore confidence with the ship's company, which has been roughly shaken by the recent catastrophe; the other that additional precautions have become essential owing to the introduction of new weapons of offense since the ship was launched. Since, however, somewhat similar alterations will be carried out in all the ships whose construction was recently catalogued as faulty by Sir Edward Reed, it is generally opined that, although the constructor's department may not care to acknowledge it, this is an admission that the original designs were defective, at least in some respects.—*New York Herald, Paris edition.*

The turrets, or gun-shields, of the *Centurion* are of oval shape in plan and are heavily framed inside. The armor, which is 6 inches thick on the front and sides, is made up of slabs sloping back at an angle of about 45°, giving a horizontal thickness of 8.4 inches. In

rear the armor is considerably thinner. The guns pass through oval holes in the sloping front. Each turret, with the turn-table and guns, weighs 220 tons, and can be trained by hand or steam-power.

The official return of the trial of the *Speedy* gives the I. H. P. as 4703.2 instead of 4674.7 as given in the NOTES two months since.

The Admiralty has decided to include in the stores of each first-class torpedo-boat two collision mats, one 6 feet by 4 feet, and the other 8 feet by 6 feet. Hitherto the boats have had no means of effecting temporary repair to injuries inflicted below the water-line by collision or otherwise.

Some important trials with Martin's induced draft system took place last fall on board the *Gossamer* at Chatham dock-yard. The experiments proved so successful that the principle will be applied to many other vessels in the British navy and to others under construction. The first trials were not very satisfactory, owing to the smallness of the tubes, but this was easily remedied.

After carefully considering the recent suggestions relative to water-tight doors on board ship, the Admiralty have decided that in torpedo boats the presence of bulk-head water-tight doors is more likely to prove a source of danger than of security, owing to the fragile nature of the vessel's construction and the probable inability of obtaining access to the necessary compartments at a time when the doors are required to be instantaneously closed. Instructions have, therefore, been given for the existing water-tight doors in torpedo-boats Nos. 21 to 81 (which practically includes all the efficient first-class torpedo-boats in the service) to be removed, and the apertures thus caused to be so built up that the bulkheads will be made permanently water-tight. Hatchways, with water-tight lids on deck, will be fitted to those compartments to which access has formerly been obtained through a bulk-head door-way. The alterations will be made as opportunities offer, but it is desirable that the whole of the boats referred to should be made efficient in accordance with the new instructions before the next manœuvres. The Admiralty have in view the fitting of cap ferrules to the boiler-tubes of all first-class torpedo-boats, but the ferruling is to be deferred until experiments have been carried out with a torpedo-boat with ferruled boiler-tubes. With this object their lordships have directed that No. 86 torpedo-boat, at Devonport, is to have her boiler-tubes fitted with cap ferrules, and when she is ready for sea the Admiralty are to be communicated with in order that an official might attend to conduct a series of experiments.—*Naval and Military Record.*

France.

The first-class battle-ship *Magenta* has been fully completed and is now about to join the Mediterranean squadron. She is the last of four ships originally of like design, but which were altered in building, so that no two are precisely alike. The first to take the water was the *Hoche*, and in her the most radical changes were made. The *Neptune* and *Marceau* followed on very nearly the original plans. The *Magenta* was launched early in 1890, after having been nearly ten years on the stocks. Her dimensions are as follows: Length over all, 103 metres (337 feet 11 inches); beam at the water-line, 20 metres (65 feet 7 inches); draught forward, 7.7 metres (25 feet 3 inches), amidships, 8.0 metres (26 feet 3 inches), aft, 8.3 metres (27 feet 3 inches). The displacement at this draught is 10,318 tons. The armor belt is complete, 15.7 inches thick forward, 17.7 inches amidships, 13.8 inches aft. The width amidships is 7 feet 4 inches, 2 feet 6 inches above water and 4 feet 10 inches below. The thickness of the barbettes is 15.7 inches, steel, from Creusot. The armor deck is 3.15 inches. The main battery consists of four 34-centimetre (13.4-inch) guns in four barbettes, one forward, one aft, and one on each side amidships. The auxiliary battery consists of sixteen 14-centimetre (5.5-inch) rapid-fire guns; two on main deck forward in sponsons, one each side; four

in the corners of the upper part of the superstructure, the forward pair firing from ahead to a little abaft the beam, the after pair from astern to a little forward of the beam; the remainder are in broadside on the main deck. The secondary battery consists of six 65-millimetre (2.56-inch) R. F. G., eighteen 3-pounders, six 1-pounders, six revolving cannon, and two 65-millimetre boat guns. The motive-power consists of two sets of inverted vertical compound engines, in separate compartments, driving twin-screws. There are eight 3-furnace boilers in pairs in separate compartments. The horse-power of the machinery is about 11,000, and the speed on trial was 16.25 knots. The coal-supply at load-draught is 600 tons, total capacity of bunkers, 800 tons. The complement of officers and men is 696. The *Magenta* differs considerably from the others of her class in appearance. A light bow has been built above the ram for the purpose of improving the speed, but it apparently has not had that effect. The single 5.5-inch gun in the bow has been replaced by a 65-millimetre gun in the light built-up portion. Two 5.5-inch guns have been mounted on sponsons on each side directly above the hawse-pipes, which are very far aft. The superstructure is very high, extending within fifteen or twenty feet of the top of the smokestack. The military masts, of large diameter, are two in number, placed at each end of the superstructure. Each carries three tops: the lower closed in, forming an observation- or conning-tower; the middle carrying rapid-fire guns; and the upper carrying a search-light.

The French are about to build an experimental wooden torpedo-boat; the dimensions and engine-power of which will be exactly similar to those of a sea-going torpedo-boat. The object is to test the conditions of sinking a torpedo-boat going at full speed by gun fire. It is hoped by this means to obtain conclusive results, either favorable or unfavorable.

Russia.

A new battle-ship to be called the *Paris* has been laid down at Nicolaieff. It is said that she will be similar in type to the *Three Saints* (*Tri Sviatitelia*), recently launched.

Work has been commenced at the Baltic ship-building yard, St. Petersburg, on two new armored cruisers of a similar type to the *Rurik*. The dimensions of one will be: Length, 480 feet; breadth, 68 feet 6 inches; depth, 25 feet; displacement, 12,130 tons. The dimensions of the other are: Length, 446 feet 9 inches; breadth, 70 feet; depth, 27 feet; displacement, 12,095 tons. The speed of both vessels will be about 19 knots and the complement 700 men. The armament will consist of 40 guns of various calibres and six torpedo-tubes.

Italy.

The only sister ship to the *Admiral di St. Bon* yet under construction is the *Emanuele Filiberto*. The description given in the NOTES for April, 1893, and corrected in the NOTES for May, is in the main correct. The battery, however, is as follows: Four 9.8-inch guns, mounted in pairs in turrets forward and aft; eight 4.7-inch rapid-fire guns in the central armored citadel; eight 6-pounders, twelve 1-pounders, two machine guns, and five torpedo-tubes.

Somewhat fuller details of the trials of the torpedo-cruiser *Aretusa* than those given last June are now available. The natural-draft trial consisted of a run each way over a 72-mile course. The duration of the trial was about ten hours, of which a little less that eight hours were spent on the course. The average indicated horse-power was 2129 (contract requirement 2000). The *Aretusa* was built by Orlando Bros., Leghorn), and the average speed maintained 18.06 knots. It is permitted, during natural-draft trials in the Italian navy, to run the fans to assist the ventilation, but not to give any air-pressure in the fire-rooms. During this trial the fans were not started at all, as the contractors did not consider it necessary. The forced-draft trial was of three hours' duration. The results were: I. H. P., 4422 (contract requirement 4000); revolutions, 264.6; mean speed, 20.7 knots. On account of the excess of I. H. P. above the requirements the contractors received a bonus of $25,000.

Germany.

The German government is making extensive trials of a system of establishing communication between ships and the shore by means of carrier-pigeons. If these should prove satisfactory, it is expected that pigeon stations will be established all along the coasts.

The ships of the German navy are to be painted cinnamon-yellow, that color being considered by them to be on the whole the least visible by night as well as by day. In France the color for war service is the shade of gray called by the French *toile mouillée*, from its resemblance to the hue of wet sail-cloth; but recently they have been painting many ships black, and it may be they are changing their minds, though black may be merely a peace color.

The new classification of the German navy is independent of age or speed, being based solely upon designed use and displacement, except in case of cruisers, where it is modified by gun-power and protection. The first armor-clad category, "Sea-going Armor-clads," includes three classes,—viz., First, ships of 10,000 tons or more,—the new ships *Brandenburg*, *Kurfurst Freidrich Wilhelm*, *Weissenburg*, and *Wörth;* second, ships between 7500 and 10,000 tons,—*König Wilhelm*, *Kaiser*, and *Deutschland;* third, ships between 7500 and 5000 tons,—*Preussen*, *Freidrich der Grosse*, *Sachsen*, *Bayern*, *Würtemberg*, *Baden*, *Oldenburg*. The second armor-clad category, "Coast-service Ships," has two classes, the fourth and fifth of armored ships. The first of these, or the "fourth class," includes ships from 3000 to 5000 tons,—*Siegfried* and her sisters; the next, or "fifth class," are styled "Armored Gunboats," and consists of the *Wespe* and *Bremse* classes. The third category includes all cruisers. The first class of cruisers will be those carrying guns of at least 21 centimetres (8.27 inches) and deck and side armor, of which there are at present none in the German navy; the second class includes all cruisers, deck-protected, over 4000 tons, and carrying guns of 15 centimetres; the third class cruisers are of 2000 to 4000 tons; the fourth class are of 1000 to 2000 tons. The fourth category consists of gunboats; the fifth, of dispatch vessels; the sixth, of torpedo division boats; the seventh, of torpedo-boats; the eighth, of school-ships; the ninth, of vessels employed on special service; and the tenth, of the auxiliary cruisers of the merchant marine.

Netherlands.

The three cruisers, type A, whose construction was stated in the NOTES for May, 1893, to have been authorized by the Netherlands Parliament, are now under construction. Their names are *Evertsen*, *Piet Hein*, and *Kortenaer*. They are alike in all respects, and are lightly-armored, twin-screw cruisers with complete belt; single-armored barbette forward; flush spar-deck with central superstructure amidships for about half the length, and in width a little more than half the beam of the ships; armored conning-tower just forward of foremast; one smoke-pipe; two military masts, each carrying a fighting top; rounded ram bow. The dimensions are: Length, 282 feet 10 inches; beam, 46 feet 11 inches; draught aft, 16 feet 9 inches; displacement, 8400 tons. The belt armor is 5.9 inches thick amidships, tapering to 3.9 inches at bow and stern. The barbette is 9.45 inches thick, the protective deck 2.36 inches, and shields over guns 1.2 inches. Two 21-centimetre (8.27-inch) guns are mounted in a pear-shaped barbette forward of the superstructure, with arc of fire from right ahead to broad off each quarter; one 21-centimetre gun is mounted on a central pivot mount on the open deck abaft the superstructure, and is protected by a large shield only; six 7.5-centimetre R. F. G., three each side, are mounted on the superstructure, the forward and after pairs firing parallel to the keel; two 7.5-centimetre B. L. and six 1-pounder R. F. G. are mounted in various places; and three torpedo-tubes are fitted. The expected speed is 16 knots.

Brazil.

The naval vessels at the disposal of the Peixoto government on March 1, 1894, were the *Riachuelo* (armor-clad, two turrets, four 9-inch guns, 5700 tons); *Benjamin Constant* (cruiser, 2750 tons, de-

signed for academical training-ship, under construction in France); *Tiradentes* (gunboat, 800 tons, completed 1893); *Bahia* (river monitor, one turret, two 7-inch Whitworth guns, 1000 tons). The *Riachuelo* closely resembles—in fact, is almost identical in design with—the U. S. S. *Maine* and the Brazilian *Aquidaban*, but in displacement is about halfway between them. She carries two 5.5-inch guns more than the *Aquidaban*, and when both are in good condition is about 1¾ knots faster. But the *Riachuelo* is under repairs in France that will take some months to complete, and the *Constant* is not yet finished. The *Tiradentes* is a new ship in perfect order. She has been lying at Montevideo since the outbreak of hostilities. The *Bahia* is in fair order, having been recently overhauled, two more 3-pounders mounted, one on each end of the bridge, and she has been fitted with a ram. She carries two 7-inch muzzle-loading Whitworth guns in a closed turret 5.5 inches (iron) thick, and has 4.5-inch side armor. She resembles very closely the Chilean (ex-Peruvian) *Huascar*. She, too, is at Montevideo, and has been there ever since she came down the river from Paraguay in the early days of the revolution. It was decided to supplement these by converted merchant steamers and such other vessels as could be acquired with the funds which could be spared for the purpose. The Brazilian steamers *Santos*, *Itaipu*, and a few others were taken possession of and fitted with miscellaneous batteries of rapid-fire, machine, and field guns of all sorts and calibres.

The American steamer *Cid*, of the Southern Pacific Railway Company's Line, was purchased in New York. Her dimensions are: Length over all, 406 feet; beam, 48 feet; depth, 33 feet 9 inches. She was completed in 1893, and has triple-expansion engines, boilers carrying 170 pounds of steam, and her speed is about 17 knots. Forward of all the deck-houses is a 15-inch pneumatic dynamite gun, with the carriage and breech of gun sunk below the upper deck, a large circle being cut out of the latter to permit of training. The arc of train is about 270°, but the angle of elevation is permanent. On each bow abreast the pneumatic gun is mounted a 4-inch Hotchkiss R. F. G.; aft, on the midship line, a 4.7-inch Hotchkiss R. F. G. is mounted on a centre-pivot carriage; a 6-pounder is mounted on each side amidships, while two 37-millimetre revolving cannon and eight 1-pounder R. F. G. are mounted on the upper deck or on the deck-houses. On the main deck are two Howell torpedo-tubes and one 6-pounder R. F. G. Light steel screens or shields are fitted on some of the guns and around the steering-wheel, which is directly over the rudder-head. In addition to her Howell torpedoes the *Cid*, or as she is renamed, the *Nictheroy*, carries a Savage-McAlpine torpedo stowed on the spar-deck and two improvised torpedo-boats. These are the *Fei-seen* (length, 68 feet 9 inches; beam, 9 feet 8 inches; draught, 3 feet 1 inch; speed, 27.7 knots; built by C. D. Mosher, of New York) and the *Javelin* (about the same size, built by Herreshoff, speed, 18 knots). These little vessels each carry a 1-pounder R. F. G. and a torpedo-tube on a turn-table on deck.

The *Britannia*, of the North Atlantic Steamship Line, of Boston, was also purchased, and renamed the *America*. She was built at Bergen, Norway, and completed in 1890. Her dimensions are: Length, 275 feet; beam, 34 feet; registered tonnage, 2000. The engines are triple-expansion of about 3000 I. H. P., and the maximum speed about 17 knots. At 12 knots her coal-supply is sufficient for 30 days' steaming, or in distance about 8500 miles.

Both the *Nictheroy* and *America* have electric light plants.

The *Destroyer*, submarine-gun-vessel, was originally designed by Ericsson as a sort of floating gun-carriage in which to mount his submarine gun and to exhibit the special features which vessels of the sort should possess. She was not designed to go to sea, but for experiment only, and to save expense was made as small as possible consistent with the end in view. Her dimensions are: Length, 130 feet; beam, 12 feet; depth, 11 feet. The hull proper rises about one foot above the water; over this, for a length of 70 feet amidships, and the full width of the vessel, rises a superstructure about

7 feet high, in which are the quarters for officers and crew. Below the upper deck is a water-tight deck, extending from stem to stern, the crown of which amidships is 30 inches below the upper deck. The space between the two decks is subdivided and arranged to be filled with water-excluding material. There are no water-tight bulk-heads below the water-tight deck. There are no coal-bunkers, nor room for any, and coal for 4 hours' steaming only can be carried. Nor is there stowage space for provisions or stores. In the bow, or gun-room, three torpedoes, or projectiles, can be carried. These are 25 feet long, 16 inches in diameter, and weigh 1500 pounds, carrying 300 pounds of explosive. The charge of the gun is 12 pounds of powder. The protection consists of a 1-inch armor deck, extending aft from the bow a little over 30 feet, and ending at an 8-inch inclined armor-bulk-head extending from side to side, and inclined at an angle of 45° with the horizontal. So far as known the maximum speed has never been ascertained, but it is believed to be about 13 knots. The *Destroyer* left New York in tow of the steamer *San Luis* on December 4, 1893. Her present whereabouts are unknown, but no use has yet been made of her.

The *Aurora* is a torpedo-gunboat, built by Laird, of Birkenhead, for the Argentine government, but sold to Peixoto. She arrived at Pernambuco late last autumn. Her dimensions are: Length, 203 feet 5 inches; beam, 20 feet; draught, 13 feet 9 inches; displacement, 500 tons. The I. H. P. of the machinery is 2300, and the speed 18 knots. The battery consists of two 12-centimetre (4.7-inch) and four 3-pounder rapid-fire guns, and three torpedo-tubes are fitted. The *Aurora* was launched in 1892, and was just completed when purchased.

HEAVY GUNS.

In the new Armstrong automatic breech mechanism for heavy guns—and which is to be fitted to the new 10- and 12-inch guns for the British navy—the energy of recoil is utilized to open the breech and to compress a spring which furnishes power to close it again. There is no delay in opening the breech after the gun is fired, and, after the gun is loaded, pulling a small lever releases the spring, which then closes the breech quickly. The chief advantage of this automatic mechanism appears to be in increased ease of working the piece. It cannot very greatly affect the rate of fire except when the plug works stiffly. With a reasonably good hand-breech mechanism, the time required to fire a number of shots depends chiefly upon the ammunition-supply. And it is in that direction that the greatest gain in rapidity may be looked for. In this connection it may not be amiss to call attention to the importance of mounts permitting the loading of the guns in any position, especially any position of train. In the case of guns mounted in pairs, if loading can be effected in any position of train, it is not necessary that both should be fired and loaded practically together. Each may be worked independently. While one is being trained and fired the other is loading. So that no time is lost waiting for the other piece, or in going to or returning from the loading position. The guns being at all times kept trained on the enemy he cannot tell at what moment one or both may be fired. The moral effect of this state of suspense must be worth something. And, moreover, with the guns always turned towards the enemy, their long chases projecting beyond the turret armor or shield, or rising above the barbette, are not exposed to injury from projectiles of comparatively small calibre.

While firing a salute on board H. B. M. S. *Blanche* (third-class cruiser, 1580 tons) a serious accident occurred, closely resembling that which took place on the *Philadelphia*, at Baltimore, a couple of years ago. The reports do not give the calibre of the gun, but the charge was apparently in a cartridge-bag, for it exploded before the breech was closed,—probably from smouldering grains of powder or bits of the cartridge-bag. One of the gun's crew had his left arm shattered and his face and eyes dreadfully injured. Another man was wounded in the head, and it is feared he will lose his sight; and several others

sustained injuries of a less severe character. A similar accident recently took place on the *Mersey*.

RAPID-FIRE, MACHINE, AND FIELD GUNS.

At the exercises which took place at Silloth proving-grounds in December last, before a number of foreign officers, a number of experiments were made with rapid-fire, field, and naval guns. These were partly described last month. A more complete report enables us to give the following additional notes:

A 15-pounder mountain howitzer, built for taking apart for transportation, was shown in two pieces just as it would be when taken off the backs of mules which are supposed to carry it. In five minutes the gun was screwed together on its carriage and ready for firing. Both shrapnel and segmental shell were used, "and the practice at 1500 yards was greeted with loud applause."

A 6-inch gun on a light portable disappearing mount was shown in position behind a parapet erected for the purpose. This mount is specially designed for transport in the siege train, and it can be readily taken to pieces, so that the heaviest load does not exceed three tons, and yet it can be readily erected, the time required, if plenty of labor is available, being about ten hours. The erection could, therefore, take place during the night. The return to the firing position is effected by a strong spiral spring set up by the recoil, and the mechanism is said to be so simple that it is unlikely to get out of order. No pneumatic cylinders nor pistons are used. Several shots were fired before the visitors, and everything worked very satisfactorily. It may be remarked that the range at Silloth is on loose sand, making the conditions of working particularly trying to guns and mounts.

A 4.7-inch gun on a pedestal mount was fired for rapidity, the shots being directed at a target 1000 yards distant. The total length of time required to fire five rounds was only twenty-two seconds, and the practice was so good that at the second shot the target, which only consisted of a cask with a flag-staff on it, was knocked to pieces. The muzzle velocity of this piece was 2500 feet per second.

A 4-inch, 30-pounder gun was then shown. The mounting of this piece possesses several peculiarities, the principal of which is that the keys which guide the gun during recoil are on the sides instead of on the top and bottom. The advantage of the new position lies in rendering the top of the cradle unnecessary, and better protection is given to the keys. The gun and mounting are protected by a shield 4.5 inches in thickness, and the sighting is done over the top of the shield in such a manner that the firer has always got an all-around view. Aiming practice was carried on with this gun at a target 2000 yards distant, and each shot struck within a few yards of the target. A new pattern of aiming-tube, to be used with these naval rapid-firing guns, was then shown to the visitors, who were much pleased with its extreme simplicity, and they entertained themselves for some time in firing at a target erected for the purpose. With the 6-inch gun an aiming-tube firing a 1-pound projectile was used, and with the 4.7-inch and 4-inch the tubes were fitted to fire 45-calibre Martini-Henry ammunition.

A Carlisle correspondent telegraphs that the large disappearing gun at Armstrong's experimental range at Silloth burst during some experiments yesterday (December 6). One man, a fitter connected with the firm's works at Elswick, was killed. Experiments were being conducted in the presence of a party of visitors, chiefly from Newcastle, but none of them, so far as is known, was injured.—*New York Herald, Paris edition.*

The English newspapers and service periodicals are significantly silent about this accident, and the details are, therefore, not available. *Le Yacht* states that the breech-plug was blown out. The piece is probably the 6-inch gun whose disappearing mount is described above.

L. S. Van Duzer,
Lieutenant U.S.N.
Philip Andrews,
Ensign U.S.N.

SERVICE SALAD.

The Mud March.

A CHAPTER IN THE HISTORY OF THE ARMY OF THE POTOMAC OF INTEREST TO THE CITIZENS OF FREDERICKSBURG.

THE Army of the Potomac was much demoralized after the battle of Fredericksburg. It had fought gallantly, experiencing neither rout nor disorder. It had retreated over the Rappahannock without the loss of a piece of artillery, but its defeat was complete. The little confidence Major-General Ambrose E. Burnside, its commander, had inspired in the minds of officers and men had vanished. The respect entertained for the character of the unfortunate general could not supply its place. Major-General Henry W. Halleck, the general-in-chief, was accused of reserving his favors for the armies of the West, and of addressing the officers and men of the Army of the Potomac only in terms of criticism and censure.

The old soldiers who had served in the campaign up the Peninsula until the spires of Richmond were seen six months before, could but realize, with bitterness, that they were farther than ever from the attainment of the object of their efforts.

The army had not been paid for six months. The men who had enlisted in defense of their country under the conviction that their families would be supported by it, as had been promised, were daily receiving letters stating their destitution and the distress which resulted from their helpless condition.

Those more recently enlisted had experienced war in its most tragic aspect, and the enthusiasm which led to arms had been fed upon so low a diet that it had nearly, if not quite, oozed out of the army.

The mortality was great. Men died of disease caused by homesickness. Not an hour of the day passed in any of the camps without the funeral dirge, as escorts followed the heroes of death to temporary resting-places. Desertions were at the rate of two hundred a day. Parents, wives, brothers, sisters, and sweethearts were so anxious to relieve relatives and loved ones from a service that had become irksome, and in the success of which they had lost faith, that express cars were loaded with packages of citizens' clothing, put up in every conceivable way to deceive as to contents, to aid desertion. The mails were used for the same purpose. The demoralization was not alone the result of defeat and non-payment, but also of a lack of confidence between officers and men. The President had issued his Emancipation Proclamation, September 22, 1862, and a large proportion of the officers, non-commissioned officers, and privates were opposed to the policy of the government. As to the generals, they nearly all criticised the plans of campaign accredited to Burnside, some openly and others within the circle of their intimate friends; but Franklin and Smith wrote to the President, endeavoring to convince him it would be useless and dangerous to again attempt the passage of the Rappahannock in that vicinity.

Immediately after his defeat, Burnside became so absorbed in strategic combinations that he did not notice, or did not appear to notice, the increasing spirit of dissatisfaction in the rank and file of his army, and on the 26th of December, 1862, thirteen days after one of the most bloody and useless conflicts of the war, had completed plans for another movement against the Army of Northern Virginia, under General Robert E. Lee, in its impregnable position upon Marye's

Heights and adjoining hills,—about one mile to the rear and south of Fredericksburg,—and had ordered his army to be prepared to move upon twelve hours' notice, with three days' cooked rations in haversacks and ten days' uncooked in wagons, with forage, beef-cattle, reserve ammunition, and the customary *impedimenta*.

His plan was to cross at Muddy Creek, about seven miles below the city; a feint to be made above which could be resolved into a positive attack should the movement below be discovered. The positions for the artillery had been selected, surveys made, and the corduroy cut for building the necessary roads.

An expedition was organized, consisting of twenty-five hundred of the best cavalry in the army,—of whom one thousand were picked men,—to move, accompanied by a brigade of infantry and four pieces of artillery, to protect their crossing to Kelly's Ford on the Rappahannock; there the thousand were to cross, proceed to the Rapidan and cross that river at Raccoon Ford; the Virginia Central Railroad at Goochland or Carter's, blowing up the locks of the James River Canal at the place of crossing; the Richmond and Lynchburg Railroad at a point farther south, blowing up an iron bridge; the Richmond, Petersburg and Weldon Railroad where it crossed the Nottoway River, destroying the railroad bridge there, and effect a junction with the forces under Major-General John J. Peck at Suffolk, where steamers would be in waiting to convey them to Acquia Creek.

To deceive the enemy and draw attention from the attacking column, when the thousand crossed the Rappahannock, a part of the remaining fifteen hundred was to proceed to Warrington and another part to Culpeper; the rest to accompany the thousand as far as Raccoon Ford and return. While the proposed expedition should be *en route* the general movement would be made.

The Army of the Potomac was at that time organized in four grand divisions: the right, commanded by Major-General Edwin V. Sumner, was composed of the Second Corps, Major-General Darius N. Couch, and the Ninth Corps, Brigadier-General Orlando B. Wilcox; the centre, commanded by Major-General Joseph Hooker, of the Third Corps, Major-General George Stoneman, and the Fifth Corps, Brigadier-General Daniel Butterfield; the left, commanded by Major-General Wm. B. Franklin, of the First Corps, Major-General John F. Reynolds, and the Sixth Corps, Major-General Wm. F. Smith; the reserve, commanded by Major-General Franz Sigel, of the Eleventh Corps, Brigadier-General Julius Stahel, and the Twelfth Corps, Major-General Henry W. Slocum.

General Burnside required the commanders of the Grand Divisions to correspond directly with the adjutant-general of the army in reference to such matters as resignations, discharges, leaves of absence, recruiting service, etc., in regard to which he would have to be governed by their suggestions, as he thought attention in detail would surround him with a large number of staff-officers and embarrass him with responsibilities he did not wish to assume; thereby not only relinquishing a certain amount of control he should have exercised, but denying himself necessary information as to the *personnel* and *morale* of his army; and when Hooker assumed the command he found two thousand nine hundred and thirty-five officers and eighty-two thousand one hundred and eighty-eight enlisted men on the rolls who were not present; many in hospitals, on leave, furlough, or detached duty,—the majority, no doubt, deserters. There being no indication of an immediate movement of the army, on the 30th of December Brigadier-General John Newton, commanding the Third Division, and Brigadier-General John Cochrane commanding the First Brigade, Third Division, Sixth Corps, obtained leave of absence, informing Generals Franklin and Smith that upon arrival in Washington they would represent to some one in authority the dispirited condition of the army and the danger of a forward movement at that time.

It was their intention to confer with Senator Henry Wilson, of Massachusetts, Chairman of the Senate Military Committee, and Hon. Moses F. Odell, of

New York, a member of the Congressional Committee on the Conduct of the War, and to them impart a statement of the condition of the army, "to undergo the operation of their judgment, and to be weighed at their true value, whatever that might be." Congress having taken its holiday recess, both gentlemen were absent from the city.

General Cochrane, who upon arrival had started out alone to arrange an interview with Senator Wilson and Mr. Odell, upon being informed of their absence, thought it advisable to see the President upon a matter of such vital interest. Calling upon the Secretary of State, Hon. Wm. H. Seward, through him an interview with President Lincoln was arranged for late in the afternoon of their arrival.

The earnestness of the officers is apparent, as they did not arrive in Washington until three o'clock in the afternoon on which the interview was had. Arrived at the Executive Mansion and ushered into the presence of the kind-hearted, easily-approached President, who, *ex officio*, was commander-in-chief of the army and navy, the gentlemen, as officers of the army, were delicately situated.

General Newton, the senior officer, introduced the subject, and spoke at length upon the military position of the army, and the feeling of the soldiers in connection with Burnside as a leader; although he did not tell him the troops had no confidence in Burnside, notwithstanding that was his belief.

Upon Newton's conclusion the President showed much feeling, apprehensive that the conversation was a representation by officers of the Army of the Potomac concerning the plan of operation of its commander, with a view to his supersedure by some other officer.

General Cochrane, therefore, addressed him in protest of such an understanding, assuring him of his mistake, and that he was there only for the purpose of disclosing to him, as commander-in-chief, certain facts within his knowledge, derived through others and personal observation, of which he was convinced it was important the President should be informed; that he deemed it the best evidence of patriotism and loyalty to the government he could give; that he would not interfere with the plans or action of General Burnside as commander, and if he would he could not, as he was not aware of them; and that his last thought was to distrust or desire to replace him with another.

General Newton also disclaimed to the President any intention to interfere with the military authorities. He said he considered it his duty, if true to his country, to let some one in authority know his convictions of the condition of the army, as, if it were again defeated at Fredericksburg, or anywhere along the Rappahannock, it would not be a defeat as before, but destruction. He said his only motive in calling upon the President and making the statement he had was, that he felt the very existence of the nation depended upon it.

He requested the President not to believe what he stated because *he* said it, as, after all, it was only his opinion, but to investigate and ascertain for himself the condition of the army.

After a long conversation between the President, the Secretary of State, who was a party to the interview, and Newton and Cochrane, relative to the military features of the ground below the position of the army on the Rappahannock, which Newton had in part reconnoitred, the President seemed to realize he was mistaken, and said he was glad the gentlemen had visited him, and that good would come of the interview, which thus ended.

In the mean time the cavalry expedition referred to had started, the brigade of infantry having crossed the Rappahannock at Richard's and returned by Ellis's Ford, leaving the way clear for the cavalry to cross at Kelly's Ford.

The day the crossing was to be made Burnside received from the President this telegram: "I have good reason for saying that you must not make a general movement without letting me know of it."

He was greatly surprised, and could not understand why the President sent him such a dispatch. He could but believe it related to important military operations in other parts of the country and

that co-operation was necessary. He immediately ordered the cavalry to remain where it was, at Kelly's Ford, until further orders.

A part was soon after sent to intercept the dashing Confederate cavalier, Major-General J. E. B. (Jeb) Stuart, who had made a raid to Dumfries, capturing twenty-five wagons and two hundred prisoners, thence towards Alexandria and around Fairfax Court-House, burning the railroad bridge across the Accotink; the hard-riding raiders returning in triumph with their spoils.

Burnside went to Washington, and was informed by the President that general officers from the Army of the Potomac, whose names he declined to mention, had called upon him and represented that he contemplated a forward movement, and the army was so dispirited and demoralized that the proposition received the approval of no prominent officers and would result in disaster.

He assured the President that none of his officers had been advised of his plan, and proceeded to explain it in detail, urging him to grant permission for its execution; but he declined to approve it.

The Secretary of War, Hon. Edwin M. Stanton, and Major-General Halleck were sent for, and learned for the first time of the President's action in preventing the movement, although Halleck had known a forward movement was contemplated.

Burnside was amazed at the revelation of feeling in the army,—known to every one in it but him. Halleck approved the request he then and there wrote, that the officers who made the representations to the President be at once dismissed, and Burnside remained in Washington two days to urge such action without avail.

Before he returned to camp he learned that many of the details of the proposed movement were known to sympathizers of the enemy in Washington, thereby rendering it impracticable.

Upon being asked to whom he had communicated his plan, he said he had informed no one in Washington of it but the President, the Secretary of War, and General Halleck, and but two of his staff-officers, who had not been out of camp since. He professed not to know how the enemy had obtained his plans.

A correspondence resulted between the President, Halleck, and Burnside, who requested authority from the President or Halleck to make a movement across the river; and while urging the necessity, admitted there was hardly a general officer who approved it. He said he was willing to assume all responsibility, promising to keep in mind the President's caution against running any risk of destroying the Army of the Potomac,—but desired Halleck's sanction of the movement.

Being informed by Halleck that while he had always favored a forward movement he could not take the responsibility of giving directions how and when it should be made, Burnside decided upon a movement, without further correspondence, and although unable to devise any as promising as the one just thwarted by the interference of subordinate officers, without hesitation adopted a plan and proceeded to put it into execution.

He made a personnal reconnoissance of the ground above Falmouth, which determined him to cross his entire force at Bank's and United States Fords, if found expedient, and make further preparations with reference to crossing at Muddy Creek, as at first contemplated.

The roads and pontoon-trains were ready, the artillery detailed to cover the crossing, and the preparations complete, when he delayed two days on account of conflicting intelligence respecting the enemy's position, which rendered it necessary to send a spy, a resident of Fredericksburg, who had been driven away on account of his Union sentiments. This man went over and back two nights in succession, and obtained information which decided Burnside to make the crossing above.

Accordingly the army moved on the morning of the 20th of January, upon good roads and with pleasant weather.

The Grand Divisions of Hooker and Franklin moved up the river by parallel roads, while Couch's Second Corps went below Fredericksburg to make demon-

strations. To General Sigel, with the Reserve Grand Division, was assigned the duty of protecting the line of communication on the river front.

Positions for the artillery had been selected by General Burnside and Brigadier-General Henry J. Hunt, chief of artillery, the guns were well up and the pontoon-trains only a short distance behind, when the army encamped for the night, in the woods, at convenient distance from the fords. It was decided to make the crossing early next morning.

During the night, commencing about 10 P.M., a most terrible storm of driving snow, sleet, and pouring rain ever experienced in that vicinity overcame the unfortunate army, rendering the roads impassable.

All the long hours of that fearful night large numbers of soldiers toiled at the guns with the horses, in the futile effort to haul them up the heights and place them in position. Double and triple teams of horses and mules were harnessed to each wagon, carrying one pontoon-boat, and by morning fifteen boats were at the river-bank; but five more were needed to complete one bridge. Long ropes were attached to the guns and pontoon-wagons, a hundred and fifty men being put on each, who worked and tugged with the horses and mules. The animals dropped dead by the score, while the men, after floundering through the mud a few feet, were breathless. Virginia mud has a national reputation, the upper geologic deposits affording unequaled elements for bad roads. It is a soil out of which the bottom drops when it rains, so tenacious that extrication from its clutch is almost impossible.

The ever-watchful Lee had discovered the movement of the Union army during the night, and by morning, notwithstanding the war of the elements, had massed his army to prevent the crossing. Night came again, but the guns and pontoons were not up.

A chaos of artillery and pontoon-wagons encumbered the road to the river, —supply- and ammunition-trains were mired by the way,—all in sight of the enemy's pickets, who jeered and taunted the dispirited army, shouting, "Say, Yanks! We'll be over in the morning and haul your guns and pontoons out of the mud for you." "We'll build your bridges and escort you over." "Why didn't you let us know you were not going to cross again at Fredericksburg."

Another morning dawned upon another day of rain and storm, and things generally went from bad to worse. The more hopeless the undertaking, the more tenacious Burnside; and he determined to leave his artillery—even his pontoons —hopelessly stuck in the mud, cross in the face of Lee's army with such pontoons as he had at the river, and make a bold attack upon the arrogant, insulting enemy.

Hooker protested against so reckless a venture, and other generals did not hesitate to show their disapprobation, and were virtually insubordinate.

Ascertaining the three days' rations carried in the haversacks of the men to be exhausted, and realizing the violent opposition of the rank and file,—who had become aware of his purpose,—he reluctantly abandoned the forward movement; but not until he had telegraphed Halleck he would be glad to meet him at Acquia Creek, or if Halleck preferred, he would go to Washington for an hour.

Being told, in reply, that he must be his own judge as to the necessity, he telegraphed back, "I shall not go up." He then ordered the army back to the camps it had left, in the vicinity of Falmouth.

The problem of a backward movement was nearly as serious as the forward movement he had abandoned.

Nearly the whole army was put at work corduroying the bottomless roads and getting the artillery, pontoon, and other wagons on to the corduroy.

Early on the morning of the 23d the army moved, floundering and staggering as best it could, back to camp desperately humiliated.

The recollection of that terrible "Mud March" lives in the memories of its participants.

It was an ample vindication of General McClellan for resisting the almost universal and popular demand of the people at home—by their comfortable

firesides—for a forward movement during the winter months, when he was in command. It should have forever stopped the daily bulletin from Washington, "All quiet on the Potomac. Only one picket shot last night;" responded to by the innumerable host of "*croakers*" with, "Why don't the army move?"

The effect of the movement upon Burnside was as unfortunate as humiliating. He discovered, as he supposed, that his campaign would have been a failure had the weather continued favorable, for the reason that the leading officers of his army lacked confidence in his ability as a commander, and in desperation, apparently, after ordering the troops back to camp he prepared an order as follows:

HEAD-QUARTERS ARMY OF THE POTOMAC,
January 23, 1863.

General Orders,
No. 8.

First. General Joseph Hooker, major-general of volunteers and brigadier-general in the United States army, having been guilty of unjust and unnecessary criticisms of the actions of his superior officers and of the authorities, and having, by the general tone of his conversation, endeavored to create distrust in the minds of officers who have associated with him, and having, by omissions and otherwise, made reports and statements which were calculated to create incorrect impressions, and for habitually speaking in disparaging terms of other officers, is hereby dismissed from the service of the United States, as a man unfit to hold an important commission during a crisis like the present, when so much patience, charity, confidence, consideration, and patriotism are due from every soldier in the field.

This order is issued subject to the approval of the President of the United States.

Second. Brigadier-General W. T. H. Brooks, commanding First Division, Sixth Army Corps, for complaining of the policy of the government and for using language tending to demoralize his command, is, subject to the approval of the President of the United States, dismissed from the military service of the United States.

Third. Brigadier-General John Newton, commanding Third Division, Sixth Army Corps, and Brigadier-General John Cochrane, commanding First Brigade, Third Division, Sixth Army Corps, for going to the President of the United States with criticisms upon the plans of their commanding officers, are, subject to the approval of the President, dismissed from the military service of the United States.

Fourth. It being evident that the following-named officers can be of no further service to this army, they are hereby relieved from duty, and will report in person, without delay, to the adjutant-general of the United States army:

Major-General William Buel Franklin, commanding Left Grand Division.

Major-General William Farrar Smith, commanding Sixth Army Corps.

Brigadier-General Samuel D. Sturgis, commanding Second Division, Ninth Army Corps.

Brigadier-General Edward Ferrero, commanding Second Brigade, Second Division, Ninth Army Corps.

Brigadier-General John Cochrane, commanding First Brigade, Third Division, Sixth Army Corps.

Lieutenant-Colonel J. H. Taylor, acting adjutant-general, Right Grand Division.

By command of Major-General A. E. Burnside.

LEWIS RICHMOND,
Assistant Adjutant-General.

Speaking of his action afterwards, Burnside said, "I told my adjutant-general to issue that order at once. One of my admirers,—only two persons knew of this,—one of them, who is a very cool, sensible man, and a firm friend, told me, in his opinion, the order was a just one, and ought to be issued; but that he did not think I intended to place the President where he either had to assume the responsibility of becoming my enemy before the public, thereby enabling a certain portion of my friends to make a martyr of me to some extent, or had to take the responsibility of carrying out the order, which would be against the views of a great many of the most influential men in the country, particularly that portion of it in reference to the officers I proposed to have dismissed from service."

Burnside took the order to Washington and handed it to the President with his resignation as a major-general, saying he had never sought command, particularly that of the Army of the Potomac, and it was his wish to go into civil life after it was determined he could no longer be of use in the army. At the same time, he said, he did not wish to place himself in opposition to the President, or do anything to weaken the government. He suggested that the President might say to him, "You take the responsibility of issuing this order, and I will approve it."

The President said, "I think you are right, but I must consult some of my

advisers about this." Burnside replied, "If you consult with any one you will not do it." The President answered, "I cannot do as you wish; I *must* consult them." "You are the judge," said Burnside, "and I will not question your right to do as you please."

The President asked him to remain in Washington for the day, but as he felt he could not, requested him to go up again that night.

Upon presenting himself at night, the President said he had concluded to relieve him and place Hooker in command. With the kindest and best feeling towards Burnside, he was compelled to such a course by reason of the unfortunate circumstances. He saw no other way out of the dilemma.

Burnside, who was not at all surprised, in fact expected and desired such a course on the part of the President, simply said, "I suppose, Mr. President, you accept my resignation, and all I have to do is to go to my home." Mr. Lincoln warmly replied, "*General, I cannot accept your resignation; we need you.*"

After an interchange of views and various proposals of commands for Burnside between the President, Secretary Stanton, and Halleck, it was arranged that he should have thirty days' leave of absence.

Upon going to the War Department he was permitted to read the order, about to be issued, relieving him, as follows:

WAR DEPARTMENT,
ADJUTANT-GENERAL'S OFFICE,
WASHINGTON, January 25, 1863.

General Orders,
No. 20.

1. The President of the United States has directed:

First. That Major-General Burnside, at his own request, be relieved from the command of the Army of the Potomac.

Second. That Major-General E. V. Sumner, at his own request, be relieved from duty in the Army of the Potomac.

Third. That Major-General W. B. Franklin be relieved from duty in the Army of the Potomac.

Fourth. That Major-General J. Hooker be assigned to the command of the Army of the Potomac.

2. The officers relieved as above will report, in person, to the adjutant-general of the army.

By order of the Secretary of War.

E. D. TOWNSEND,
Assistant Adjutant-General.

Burnside was indignant, considered the wording of the order "at his own request" unjust, and upon its promulgation tendered, and demanded the immediate acceptance of, his resignation; but having been persuaded by friends to recall and acquiesce in any order affecting him that might be deemed necessary for the good of the country, he patriotically volunteered to serve wherever he might be required.

He transferred the command of the Army of the Potomac to his successor without loss in any perceptible degree of the respect and esteem in which he was held by the Northern people for his intense patriotism and zeal in the common cause.

His farewell order reads:

HEAD-QUARTERS OF THE ARMY OF THE POTOMAC, CAMP NEAR FALMOUTH,
January 26, 1863.

General Orders,
No. 9.

By direction of the President of the United States, the commanding general this day transfers the command of this army to Major-General Joseph Hooker.

The short time that he has directed your movements has not been fruitful of victory nor any considerable advancement of our lines, but it has again demonstrated an amount of courage, patience, and endurance that, under more favorable circumstances, would have accomplished greater results.

Continue to exercise these virtues, be true in your devotion to your country and the principles you have sworn to maintain, give to the brave and skilful general who has long been identified with your organization, and who is now to command you, your full and cordial support and co-operation, and you will deserve success.

Your general, in taking an affectionate leave of the army, from which he separates with so much regret, may be pardoned if he bids an especial farewell to his long and tried associates of the Ninth Corps. His prayers are that God may be with you, and grant you continued success until the Rebellion is crushed.

By command of Major-General A. E. Burnside.

LEWIS RICHMOND,
Assistant Adjutant-General.

WILLIAM HOWARD MILLS,
Late Captain Fourteenth Infantry and Brevet Major U.S.A.

Protecting Cottolene.

THE N. K. Fairbank Company of Chicago have lately brought suit in the United States Court against W. L.

Henry, of this city, for five thousand dollars for infringement of their trade-mark "Cottolene." The N. K. Fairbank Company sets forth that they originated, prepared, and put upon the market a new food product consisting of refined Cotton-Seed Oil and a small proportion of Beef Suet, making a pale yellow material of the consistency and substance of lard, almost without odor and intended to take the place of lard in cooking.

In order to indicate the source and genuineness of their new food product, they originated, coined, and use as a trade-mark the word "Cottolene." The healthfulness and many other advantages of Cottolene over lard were so apparent that Cottolene became at once very popular and is now largely sold all over the country.

The new food product and its name "Cottolene" have become widely known as the product of The N. K. Fairbank Company. The trade-mark is described as a "trade-mark for Oleaginous Food Substances, etc.," "consisting of a head or neck of a Steer or other bovine partially inclosed by sprigs and branches of the Cotton-plant."

The N. K. Fairbank Company charges that W. L. Henry, of Macon, Georgia, a dealer in fresh meats and food products generally, has been and is endeavoring unlawfully to avail himself of the benefits of the name "Cottolene" and its popularity; that he has been and is selling a product similar in kind, but inferior in quality, under the name of "Cottolene," to the injury of the original and genuine "Cottolene" and to the loss and injury of its manufacturers The N. K. Fairbank Company.

The infringements upon the trade-mark of "Cottolene" have become so frequent, and so many dealers are selling an inferior article and claiming it to be Cottolene, that The N. K. Fairbank Company are determined to protect their customers and propose to sue every retail dealer who is thus imposing upon his customers and infringing upon The N. K. Fairbank Company's trade-mark.—*Telegraph, Macon, Ga.*

SANDOW ON PHYSICAL TRAINING. Compiled and edited by G. Mercer Adam. Illustrated from photographs. Pp. 244. J. Selvin Tait & Sons, New York.

This work is only in small part an explanation of Sandow's system, being principally a compilation of newspaper accounts of his career, personal appearance, and feats of strength, together with a treatise on gymnastics. Among these statements the reports of the exciting contests at the London Aquarium are particularly interesting; and the work as a whole is full of elements of interest. The gymnastic system involved seems a simple one, being based solely on dumb-bell and bar-bell exercises, with a few of the simpler free calisthenics and exercises with machines invented by himself for the development of special muscles.

The extensive series of attractive illustrations, which show the champion in a number of classical poses, and in weight-lifting and other exercises, add greatly to the beauty and value of the work, and form a collection of striking studies carefully made from the most splendid model in the world, which must be viewed with interest by any man with a pride in his own physical development. They show to what extent a man, naturally strong, can succeed in making himself a marvel of muscular power.

Sandow has not devoted himself alone to physical training. He is understood to be a man of education, as he certainly is of gentlemanly bearing. As regards the character of his work, we can only further say that it seems to be highly esteemed at Aldershot, which in itself is a high testimonial to its merit.

MILITARY ORDER OF THE LOYAL LEGION OF THE UNITED STATES.

Companions of the Loyal Legion are invited to contribute to this department. News of the Commanderies is always welcome, but suggestions likely to inure to the benefit of the whole organization are of higher value, and therefore particularly desired. The pages of the Loyal Legion Department of the "United Service" are always at the service of members of the Order desiring to discuss matters of general interest to their comrades of the Military Order of the Loyal Legion.

New York Commandery.

Stated meeting held May 2, 1894.

To THE FIRST CLASS.—Captain **Edgar P. Putnam**, U.S.V.; First Lieutenant **William Banta, Jr.**, U.S.V.; First Lieutenant **Dennis Beach**, U.S.V.; Acting Master **Charles H. Brantingham**, late U.S.N.; First Lieutenant **John C. Curtis**, U.S.V.; Major **John Egan**, U.S.A.; Captain **Jacob Knapp**, U.S.V.; Captain **Silas G. Mackey**, U.S.V.; Captain **Reuben J. Myers**, U.S.V.; Brevet Captain **Levi D. Sheets**, U.S.V.

To THE FIRST CLASS (by inheritance from deceased officer).—**Mr. William M. Du Bois, Mr. Albert J. Myer.**

To THE SECOND CLASS.—**Mr. Judson H. Bailey, Mr. Wm. Clyde Fitch, Mr. John A. Wilson.**

Wisconsin Commandery.

Stated meeting held May 2, 1894.

To THE FIRST CLASS.—**Major Lionel J. Smith**, U.S.V.

To THE FIRST CLASS (by inheritance).—**Mr. John Verner Green.**

District of Columbia Commandery.

Stated meeting held May 2, 1894.

To THE FIRST CLASS.—First Lieutenant **George William Johnson**, U.S.V.; Captain **Edmund Orville Matthews**, U.S.N.; First Lieutenant **Solomon Sargeant Stearns**, U.S.V.

To THE SECOND CLASS.—**Mr. Howe Totten.**

The annual meeting required by the Constitution—Article XIV., Section 1—was also held at the same time, and officers of the Commandery for the ensuing year were unanimously elected, as follows: Commander, Rear-Admiral **Francis M. Ramsay**, U.S.N.; Senior Vice-Commander, Brevet Brigadier-General **Chauncey McKeever**, U.S.A.; Junior Vice-Commander, Brevet Brigadier General **Cecil Clay**, U.S.V.; Recorder, Brevet Major **William P. Huxford**, U.S.A.; Registrar, Passed Assistant Engineer **Robert H. Gunnell**, U.S.N.; Treasurer, Brevet Major **Marcus S. Hopkins**, U.S.V.; Chancellor, Captain **Crosby P. Miller**, U.S.A.; Chaplain, **James H. Bradford**, U.S.V.; "The Council," Brevet Brigadier-General **Joseph Dickinson**, U.S.V.; Captain **James A. Snyder**, U.S.A.; Captain **Horace Noble**, U.S.V.; Captain **George B. Haycock**, U. S. Marine Corps; Captain **Howard L. Prince**, U.S.V.

Michigan Commandery.

Stated meeting held May 3, 1894.

To THE FIRST CLASS.—Captain **Edwin Saunders**, U.S.V.; Lieutenant **Timothy G. Turner**, U.S.V.

To THE SECOND CLASS.—**Mr. Russell A. Alger, Jr.**

Colorado Commandery.

Stated meeting held May 1, 1894.

To THE FIRST CLASS.—Captain **Lewis Elias Sherman**, U.S.V.; Captain **Cyreneus D. Neff**, U.S.V.; Lieutenant **Eugene Allen Fiske**, U.S.V.

To THE SECOND CLASS.—**Mr. Patterson C. Fisher, Mr. Leonard T. Holden.**

TRANSFERS.

New York Commandery.

Lieutenant **Augustus H. Ward**, U.S.V., to California Commandery; Colonel **Chas. Page**, U.S.A., and Commander **John McGowan**, U.S.N., to District of Columbia Commandery; Lieutenant **C. H. Forbes**, U.S.V., to Vermont Commandery; Captain **R. M. Rogers**, U.S.A., to Maine Commandery.

Massachusetts Commandery.

Captain **Sherman P. Cooley** to New York Commandery; Captain **John T. Fish**, U.S.V., to Wisconsin Commandery; Colonel **Clayton Hale**, U.S.A., to Iowa Commandery.

California Commandery.

Lieutenant **Archibald A. Rice**, U.S.V., to Illinois Commandery, and Captain **E. L. Zalinski**, U.S.A., to New York Commandery.

Iowa Commandery.

Colonel **Nicholas Grensel** to Illinois Commandery.

Illinois Commandery.

Mr. **Chas. S. Redfield** to New York Commandery.

NECROLOGY.

Pennsylvania Commandery.

Lieutenant-Colonel **J. Wesley Awl**, Harrisburg, Pa., March 2, 1894; Lieutenant **John Aitken**, Washington, Pa., March 17, 1894.

New York Commandery.

General **Gustavus Sniper**, U.S.V., Syracuse, N. Y., March 29, 1894; Lieutenant-Colonel **Edward L. Gaul**, U.S.V., Hudson, N. Y., April 2, 1894.

California Commandery.

Captain **A. F. Wood**, U.S.A., San Francisco, Cal., April 14, 1894.

THE UNITED SERVICE

A MONTHLY REVIEW OF

MILITARY AND NAVAL AFFAIRS.

NEW SERIES.

VOL. XI.—JUNE, 1894.—No. 6.

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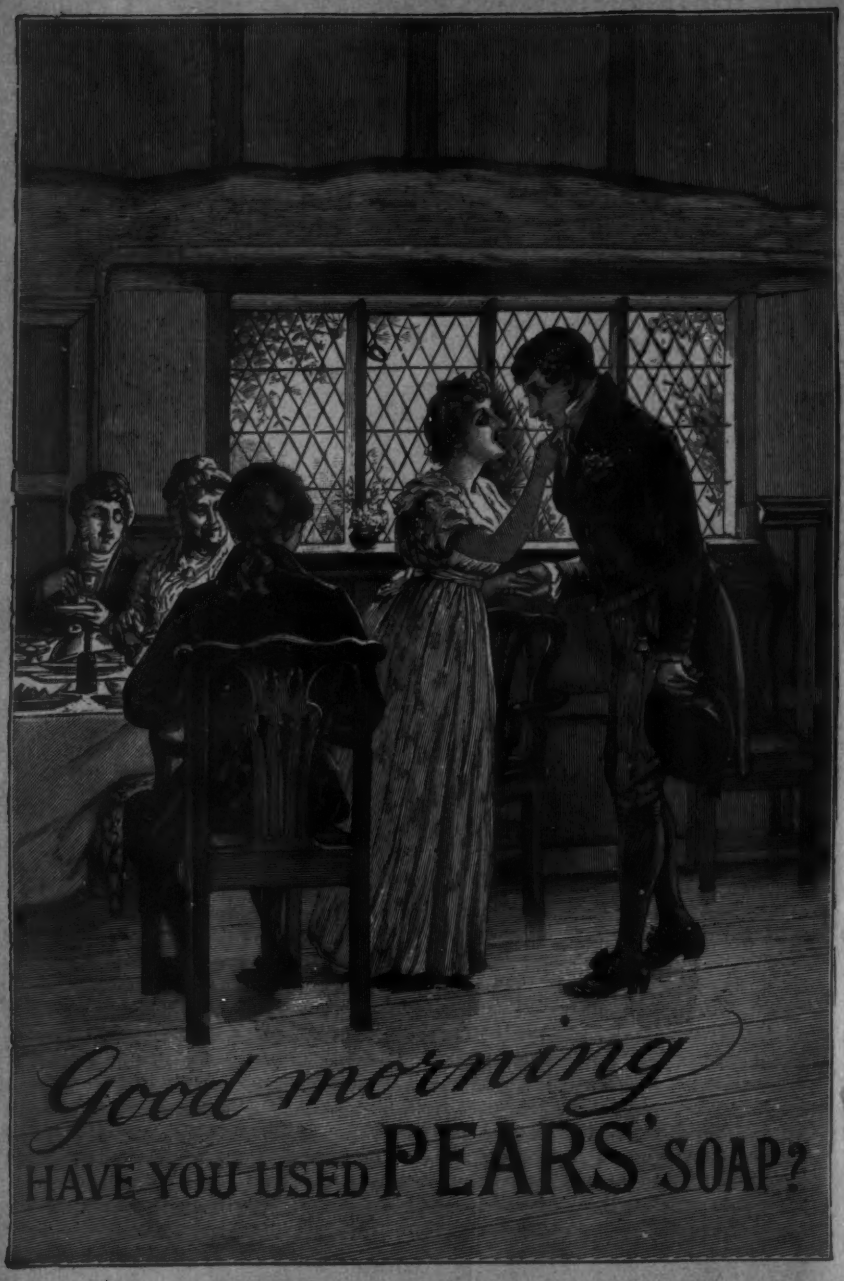
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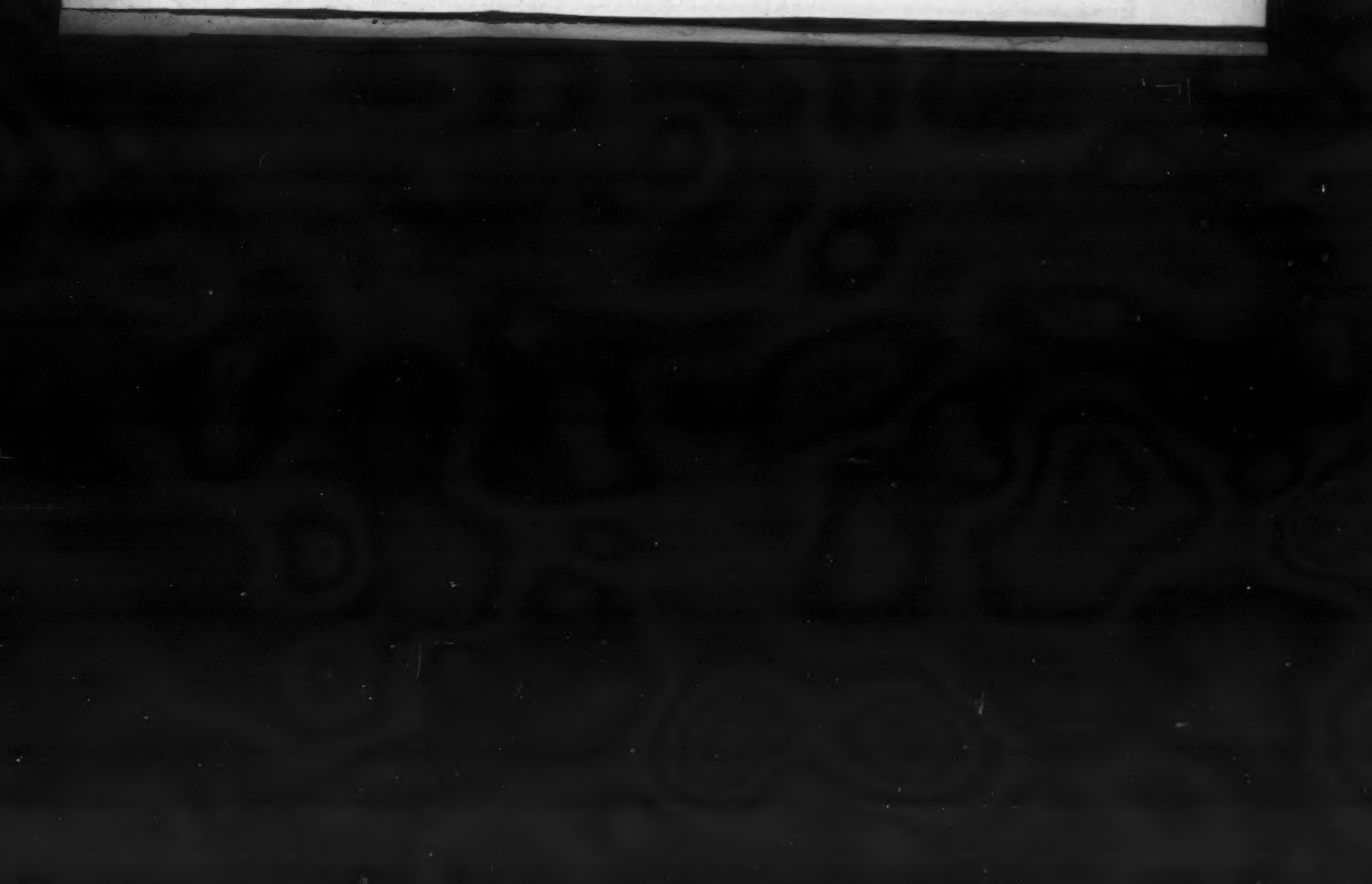

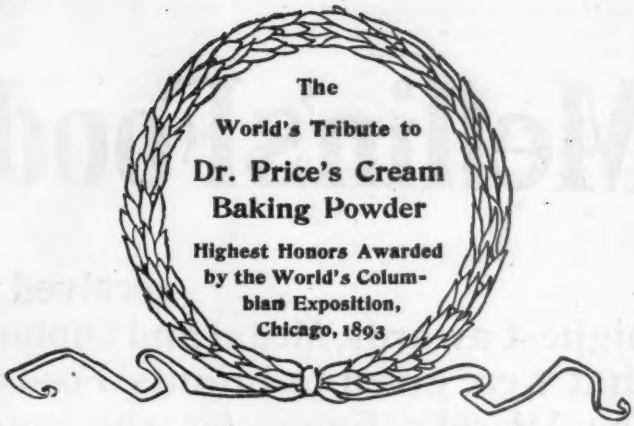

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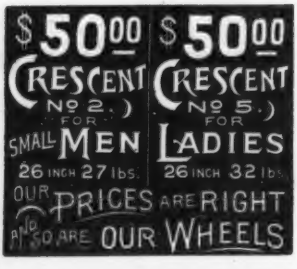
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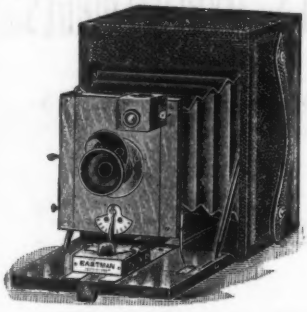

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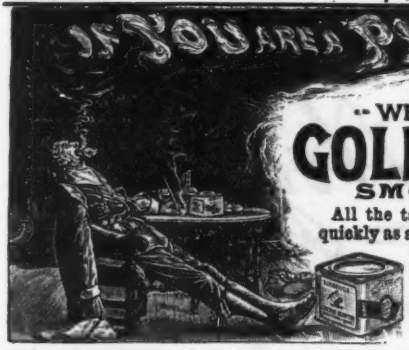

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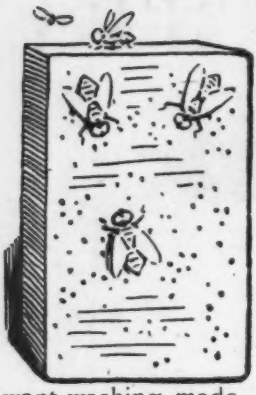

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sickness at the stomach (nausea)	fullness of the stomach (distention)	general debility
heartburn	shortness of breath (dyspnœa)	backache
loss of appetite (anorexia)	dizziness (vertigo)	pain in the side
coated tongue	wind on the stomach	heaviness
bad taste in the mouth	pain or oppression around the heart	disturbed sleep
torpid liver	fluttering of the heart (palpitation)	nightmare
pimples	irritability	hot and throbbing head
sick headache (megrim or hemicrania)	nervousness	coldness of hands and feet
nervous headache		hot skin
		sallow skin

when these conditions are caused by constipation; and constipation is the most frequent cause of most of them.

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